# AMERICAN DYESTUFF REPORTER

*"Circulated Everywhere Dyestuffs Are Used"*

**Published by Howes Publishing Company, 90 William Street, New York.**

**Devoted to the practical application of dyestuffs in all industries; especially to textile chemistry—the science and practice of scouring, bleaching, dyeing and finishing.**

VOL. XVI NEW YORK, NOVEMBER 28, 1927 No. 20


# Notes on the Bleaching of Rayon and Cotton Hosiery

**Why Sulphur Bleaching?—Preparation of the Goods—Special Precautions—Cost of the Process**

By FREDERICK GROVE-PALMER

IT has frequently been noticed that when instructions are printed for the bleaching of stockings made from rayon and either mercerized or untreated cotton, the authors recommend the use of the sulphur dioxide treatment, or, failing that, they prefer the chlorine bleach. Bleachers of experience object to both these methods under any circumstances for the fabric that is being considered, because the first is not at all permanent and the second presents very grave risks of serious injury to the material on which it is being used.

Although the greatest possible care may be exercised when ordinary bleaching powder is being used, it is too strong for the constitution of rayon and even for the cotton itself, which in these particular fabrics is of the thinnest and most delicate nature. Eau de Javelle (sodium hypochlorite), which is far less drastic in its action and gives a beautiful white when used on the cotton, has the effect of producing a yellowish tinge on rayon, especially if it be viscose, and as viscose forms 90 per cent of our output of artificial fibers at the present time, this has principally to be considered. If the soaking in hypochlorite is repeated or protracted the color is not improved in any way and the threads rapidly deteriorate.

## Why Sulphur Bleaching?

It would be interesting to know why the "sulphur bleaching" is so often advocated in England. Constantly in the British technical periodicals some variant of the process is recommended both for silk and rayon, in spite of the fact that there are very few, if any, mills in which it is employed. There are text-books in which the sulphur treatment is mentioned, but actually it went out of practice about a quarter of a century ago, when science began to take an active interest in industry and bleach works came to regard chemists as part of their normal equipment. The custom was to suspend the hanks of damp silk (rayon was not then in the market), in a stove in which sulphur was burning or to plunge it into sulphurous acid or some other of those compounds of sulphur which will readily form sulphur dioxide, such as hydrosulphite or bisulphite of sodium. When rayon came along, the same old process was recommended, but it is doubtful if it was ever actually used commercially. The result looks good; it gives a fine white color, but when the goods come to be washed in soap and water, the alkali of the soap, be it ever so mild, has the effect of bringing back to the silk and the rayon the original yellowish shade. The owner of the garment does not know what has caused the defect and very reasonably blames the laundryman for using some more of those "chemicals" or the help for introducing some unnamed "trouble-saver."

Extended observation and trials in all branches of work connected with rayon and cotton stockings has proved that the best, most lasting method of bleaching the mixture is found in the use of peroxide of sodium.

## Preparation of the Goods

The details of the treatment are given together with the quantities of materials used. The first step is, of course, to make sure that the fabric is thoroughly cleaned free of all impurities. A bath is made up containing these ingredients:

| | |
|---|---|
| Marseilles soap ..... | 5 per cent |
| Carbonate of soda, dry (calculated the weight of material in process) | 2 per cent |

The goods are soaked in this for about one hour at a temperature of 75 deg. Cent., not over, the bath being kept at that heat all the time. In this way all the grease, fat or oil that may have been used to lubricate the yarn in the knitting machines or any starch and other sort of sizing that has been used for dressing the threads is completely removed. The stockings are put into the hydro-extractor and then washed in a couple of hot baths and a cold one. After they have been again extracted, they

are sent forward to the bleach bath. This is made up to the formula given here:

| | | |
|---|---|---|
| Water | 120 | gallons |
| Formic acid, 85 per cent tech... | 4½ | pints |
| Peroxide of sodium..... | 4 | pounds |
| Phosphate of ammonium..... | ½ | pound |

The formic acid is mixed with the water and the peroxide powder is slowly sprinkled in while the liquid is kept continually stirred; this is done in order to check as much as possible the loss of valuable oxygen before it has had an opportunity of acting upon the unwanted coloring matter in the fabric. The acid is required to neutralize the alkali that would otherwise be formed and which has a very bad effect upon the rayon, tendering it and destroying its luster. Formic acid is recommended instead of the less expensive sulphuric acid which is generally used, because the sulphuric acid is very difficult to remove from the fiber even with continued rinsing, and it very quickly destroys the threads when the goods are kept for any length of time. Formic acid, although it costs rather more, has not these disadvantages and will not destroy the stockings, even if they are kept in stock far longer than the storekeeper would desire.

As it is essential to have the liquid perfectly neutral at this stage of the proceedings, it must be tested often while the peroxide is being put in, with both blue and red litmus papers, so that a constant check is kept upon it. Then as the test papers indicate that the water has become either alkaline or acid in reaction, it is necessary to add a little more acid or peroxide in order to bring it to the correct condition. When neutrality is attained, the phosphate of ammonium is put in. The addition of this salt is made in order to provide a regulator for the emission of oxygen, which would otherwise be too quick to effect a good bleach. Not infrequently sodium silicate (water-glass) is suggested for this purpose, but though it answers quite efficiently, it has the bad effect of causing a deposit, which looks like chalk but is really silica in a finely divided form, upon the fiber, and so giving a greatly reduced luster, making the finished stockings look dull and lifeless. The ammonium phosphate is a neutral salt and therefore does not make the bath alkaline which the silicate would serve to do, being itself strongly alkaline; it must always be borne in mind in dealing with rayon that excessive alkalinity is to be avoided on every occasion.

When the goods have been properly and thoroughly immersed in the bath just described, the temperature is brought up to 70 deg. Cent., and the bleaching is allowed slowly to proceed all night. By keeping the heat up to that temperature the operation may be completed in from four to six hours, which is sometimes found to be advantageous, especially when there is an urgent call for the hosiery when the sales department has been caught short. If the bleaching is being done in a rotating bleaching machine the operation must not be allowed to run on during the night, for in that case there would inevitably be considerable damage to the delicate materials. The temperature of the bath should be maintained and the work completed as quickly as possible.

### Special Precautions

When the stockings have been bleached to the required whiteness they are given a good soaking in a 2 per cent soap bath for about forty minutes at 35 deg. Cent., which is followed by two washings in warm water and a cold bath. Sometimes another rinse in slightly blued water is given, but this is not always required.

The bleaching vat should not be packed tightly with goods; it should be only lightly filled and grids to keep the stockings under the water should never be omitted. This is a point that the foreman would do well to make a personal matter, as it is sometimes neglected and will assuredly lead to trouble.

The bath is heated by closed coils, not by live steam. If this is not done the peroxide may be broken up locally and cause irregular bleaching, and there is also excessive dilution to be guarded against.

The addition of two pounds of Turkey Red oil or monopole soap to the bleach bath is strongly recommended, as it tends to remove the harsh handle that is sometimes noted as a detriment in this class of hosiery.

Softened water is needed because the salts of calcium and magnesium which cause hardness form insoluble soaps that are deposited on the fiber and cannot be washed out without special treatment; their presence gives rise to irregularities in the dyehouse. Iron should not be present in the water, as it will surely cause stains on the fabric.

If the bleach bath is to be kept for a day or so without being used, it must be made slightly acid in order to stop the evolution of oxygen. When it is being used again, it will be found satisfactory to brighten it up by adding after each batch the following:

| | | |
|---|---|---|
| Water | 12 | gallons |
| Formic acid | 1¼ | pint |
| Peroxide | 1 | pound |
| Phosphate of ammonium..... | 2 | ounces |

When the bath has been used about half a dozen times, it is generally more advantageous to throw it away and start a fresh one.

Peroxide of sodium is received in tin containers; these must be kept in a dry, cool store, and the cover must be tightly pressed down after each removal of the powder in order to stop any loss of oxygen. The peroxide is a sufficiently stable body and keeps well if it does not get in contact with moisture; and another precaution that must be exercised is that it should be kept out of contact with scraps of straw, paper and other carbonaceous matter which would tend to produce fires.

As compared with the money paid for hydrogen peroxide the cost of the sodium compound looks very high.

but the liquid consists largely of water. The figures of oxygen content are the important factor in deciding the value; that for hydrogen peroxide of 12-volume strength is 1.71 per cent, while that for peroxide of sodium is 19.07 per cent. In addition to this very great difference, the cost of carting the liquid peroxide is high, the space it occupies in storage is considerable, and there is often a lot of wastage in tilting it out of the barrels.

## CROSS-DYED RAYON PRINTS A RECENT BRITISH DEVELOPMENT

A novel style and one offering many attractive possibilities is the printing of fabrics containing both cellulose acetate and cotton fibers in cross-dyed effects. This process has recently been worked out by the rayon industry of Lancaster, England, and is based on the simple application of cross-dyeing principles to union fabrics of acetate silk and cotton.

One notable advantage of the process is its economy, as two or even three colors may be obtained in printing without the use of colored yarns. A roller is required for each color, of course, so that the number of rollers employed depends on the shades in the design.

The cross-dyeing in this case is, it is evident, made effective by practical application of the principle that acetate silk has no affinity for cotton colors and cotton has no affinity for the acetate silk dyes. Designs are thus applied in a one-bath process.

It is learned on good authority that a Lancashire firm, the Wicken Hall Print Works, Ltd., is experimenting in the production of two-color effects on acetate mixture fabrics with only one roller. Acetate and cotton dyes are mixed in the usual way, and the fabric is then printed by means of one roller, the viscose or cotton taking one color and the acetate the other.

The process is not yet a commercial proposition, for various technical difficulties have to be overcome.

## MANY USES CLAIMED FOR NEW TEXTILE SPECIALTY

A textile chemical marketed under the trade name of "Curacit" and described as an organic acid insoluble in water but forming salts with alkalies which are readily soluble, is said to be useful in a number of operations in the processing of textiles.

The wetting-out of materials which ordinarily give trouble is said to be aided by the use of Curacit, which, according to its description, will remove fine powders, such as soot, sulphur, Indigo, etc. This product is also said to have the property of converting substances to the colloidal condition and keeping them so, an action specially marked in the case of vat colors and soot. In vat dyeing the addition of small quantities prevents the formation of insoluble particles of the dyestuff.

This chemical is further described as having a marked effect on the solubility of various classes of dyestuffs and as reducing the amount of free alkali in the bath to obtain greater strength in wool fiber. It is also used to some extent in the dyeing of materials, such as linen and mixed yarns, which normally present difficulties in wetting out and in securing uniform penetration of dyestuff.

Curacit, it is also claimed, can be used in place of Turkey Red oil when dyeing in the froth of the dye liquor. The dyestuff is dissolved in 5 to 14 pounds soda and 1¼ to 5 pounds of 40 per cent Curacit soda solution per 100 gallons.

Among the other applications of this product is its use in the production of ice-colors, in the dyeing of Alizarine Red, and in bleaching operations, more especially in the bleaching of soiled or damaged goods containing vat colors. Curacit is marketed by the Dissosway Chemical Company, of Brooklyn.

## AUSTRALIAN MILLS OBJECT TO DYE IMPORT RESTRICTIONS

The restrictions imposed upon the importation of foreign aniline dyes are objected to by a section of the New South Wales textile manufacturers and they have lodged a complaint with the Federal Government. It is claimed that, in view of the growth of large textile tanning and other industries that use dyes, and the necessity for meeting the competition of outside manufacturers who have access to the best markets in the world, the Australian manufacturer should be permitted to purchase the dyestuffs which he considers suitable for his purpose. At present all requests for licenses for the importation of foreign dyestuffs to Australia must be referred through the Commonwealth Customs Department to the Dyestuffs Advisory Licensing Committee, a branch of the British Board of Trade in London. If the committee decides that a substitute made in England can be found, the request is usually refused; but in any case manufacturers say that much trade is lost through the delay occasioned by the sending to England. It is claimed by them that the authorities in London do not and cannot know the particular requirements and needs of the Australian users, which in many cases differ widely from those of the English dyestuff-using industries, according to Trade Commissioner E. C. Squire, Sydney, Australia.

German caustic soda exports declined during the first eight months of 1927 to 6,400 metric tons from 10,500 metric tons during the corresponding period of 1926. More than half of this year's imports were sent to the Netherlands, according to a dispatch from the chemical division of the Department of Commerce.

# Dyes Imported Through New York and Other Ports During October

**Compiled by the Chemical Division of the Bureau of Foreign and Domestic Commerce in Collaboration with the Chemical Division of the United States Tariff Commission**

## KEY TO ABBREVIATIONS OF MANUFACTURERS' NAMES

1—THE SIX LEADING GERMAN COMPANIES

IG—Interessen-Gemeinschaft der Farbenindustrie.
A—Actien-Gesellschaft fur Anilin-Fabrikation, Berlin. Founded 1873.
B—Badische Anilin-und-Soda-Fabrik, Ludwigshafen-on-the-Rhine. Founded 1865.
By—Farbenfabriken, vormals Friedr. Bayer & Co., Leverkusen-on-the-Rhine. Founded 1862.
C—Leopold Cassella & Co., Frankfort-on-the-Main. Founded 1870.
K—Kalle & Co., A. G., Biebrich-on-the-Rhine. Founded 1870.
M—Farbwerke, vormals Meister Lucius & Bruning, Hochst-on-the-Main. Founded 1862.

2—THE SMALLER GERMAN COMPANIES

BK—Leipziger Anilinfabrik Boyer & Kegel, Furstenberg, near Leipzig. Founded 1882.
CG—Chemikaliewerk Griesheim G. m. b. H., Griesheim-on-the-Main. Founded 1882.
CJ—Carl Jager G. m. b. H., Anilinfarbenfabrik, Dusseldorf. Founded 1823.
GrE—Chemische Fabrik Griesheim-Electron, Offenbach-on-the-Main. Founded 1842.
L—Farbwerk Mulheim, vormals A. Leonhardt & Co., Mulheim-on-the-Main. Founded 1879.
Seig.—G. Seigle Corporation, Stuttgart.
tM—Chemische Fabriken, vormals Weiler ter Meer, Uerdingen-on-the-Rhine. Founded 1877.
WD—Wulfing, Dahl & Co., A. G. Barmen. Founded 1812.

3—SWISS COMPANIES (ALL AT BASEL)

DH—Farbwerke vormals L. Durand, Huguenin & Co. Founded 1871.
G—Anilinfarben-und Extract-Fabriken, vormals Joh. Rud. Geigy. Founded 1764.
I—Gesellschaft fur chemische Industrie. Founded 1885.
S—Chemische Fabrik, vormals Sandoz & Co. Founded 1887.

4—DUTCH AND FRENCH COMPANIES

FA—Farbwerk Ammersfoort, Ammersfoort, Netherlands. Founded 1888.
NF—Niederlandische Farben-und-Chemikalienfabrik Delft, Delft, Netherlands. Founded 1897.
CN—Compagnie Nationale de Matieres Colorantes et Produits Chimiques. Founded 1917. (Etablissements Kuhlmann merged with this company in 1923.)
P—Societe Anonyme des Matieres Colorantes et Produits Chimiques St. Denis (formerly A. Poirrier). Founded 1830.

5—ENGLISH COMPANIES

Bro—Brotherton & Co., Ltd., City Chambers, Leeds.
BAC—British Alizarine Co., Ltd., Manchester.
BD—British Dyestuffs Corporation, Ltd., London.
Cl Co.—The Clayton Aniline Co., Ltd., Clayton, Manchester.
CV—The Colne Vale Dye & Chemical Co., Ltd., Milnsbridge, Huddersfield.
Hol—L. B. Holliday & Co., Ltd., Huddersfield
Scot—Scottish Dyes, Ltd., Grangemouth.

FOREIGN dyes imported through New York and other ports during the month of October reached a total of 417,626 pounds, with an invoice value of $313,122, the largest quantity recorded for any month this year. Imports by ports were as follows: New York, 409,843 pounds, with an invoice value of $302,894; Albany, 5,301 pounds, with an invoice value of $6,185; Boston, 2,424 pounds, valued at $3,983; Chicago, 58 pounds, valued at $60. Detailed figures are given below.

### Imports of Synthetic Dyes

| 1927— | Pounds | Invoice Value |
|---|---|---|
| January | 196,620 | $186,387 |
| February | 312,277 | 262,364 |
| March | 404,714 | 352,414 |
| April | 402,783 | 323,732 |
| May | 349,476 | 265,752 |
| June | 318,450 | 253,054 |
| July | 263,162 | 214,853 |
| August | 401,122 | 339,269 |
| September | 396,432 | 325,338 |
| October | 417,626 | 313,122 |
| Total (ten months) | 3,462,662 | $2,836,285 |

| 1926— | | |
|---|---|---|
| January | 300,441 | $283,635 |
| February | 369,045 | 377,638 |
| March | 487,804 | 435,891 |
| April | 437,526 | 401,606 |
| May | 392,739 | 343,745 |
| June | 333,319 | 317,896 |
| July | 351,425 | 303,079 |
| August | 380,414 | 298,159 |
| September | 387,533 | 322,446 |
| October | 460,351 | 406,167 |
| Total (ten months) | 3,900,597 | $3,490,262 |

### Five Leading Dyes, by Quantity, Imported During October

| | Pounds |
|---|---|
| Eriochrome Black A | 26,455 |
| Vat Golden Yellow GK (single strength) | 22,000 |
| Alizarine Paste | 19,390 |
| Anthra Yellow GC (single strength) | 14,529 |
| Helio Bordeaux BL (single strength) | 12,474 |

### Per Cent of Dyes by Country of Shipment

| | Oct. 1927 | Oct. 1926 | Jan.-Oct. 1927 | Jan.-Oct. 1926 |
|---|---|---|---|---|
| Germany | 61.0 | 48.0 | 57.0 | 49.60 |
| Switzerland | 27.0 | 30.0 | 26.0 | 34.10 |
| France | 2.0 | 6.0 | 3.0 | 3.72 |
| England | 1.0 | 5.0 | 4.0 | 3.94 |
| Belgium | 4.0 | 4.0 | 5.0 | 4.00 |
| Canada | 0.5 | 5.0 | 3.0 | 2.60 |
| Italy | 4.0 | 2.0 | 2.0 | 1.70 |
| Netherlands | 0.5 | — | — | 0.34 |

### Dyes and Intermediates Remaining in Bonded Customs Warehouse

| | Dyes and Colors (pounds) | Intermediates (pounds) |
|---|---|---|
| December 31, 1926 | 360,488 | 562,536 |
| January 31, 1927 | 615,542 | 647,692 |
| February 28, 1927 | 896,059 | 719,055 |
| March 31, 1927 | 869,963 | 712,617 |
| April 30, 1927 | 1,125,983 | 827,260 |
| May 31, 1927 | 1,065,143 | 813,137 |
| July 31, 1927 | 925,569 | 844,058 |
| August 31, 1927 | 887,447 | 876,786 |
| September 30, 1927 | 705,885 | 808,560 |

The dyes in this report are grouped by both Colour Index and Schultz numbers, and, in the case of those which could not be identified by either number, the classification according to the ordinary method of application was adopted. As the pastes and powders of the vat dyes vary widely in strength and quantity, each vat dye has been reduced—in nearly every case—to a single-strength basis.

## DYES OF COAL-TAR ORIGIN

| Col. Index No. | Schultz No. | Name of Dye and Mfr. | Quantity (pounds) |
|---|---|---|---|
| 10 | 7 | Naphthol Yellow SXX—(IG) | 100 |
| 32 | 182 | Brilliant Sulphon Red B, 5B—(S) | 1,000 |
| 44 | 56 | Nitrosamine Red Paste—(IG) | 500 |
| 70 | — | Rapid Fast Red GL Paste—(IG) | 6 500 |
| 105 | 88 | Acid Anthracene Brown R—(IG) | 400 |
| 114 | 94 | Guinea Fast Red 2R—(IG) | 500 |
| 127 | 118 | Geranine G—(IG) | 198 |
| 172 | 159 | Acid Alizarine Black R—(IG) | 500 |
| 204 | 184 | Eriochrome Black A—(G) | 26,455 |
| 219 | — | Eriochrome Flavine A Conc.—(G) | 1,102 |
| 236 | 222 | Yellow JG—(IG) | 200 |
| 252 | 227 | Cotton Scarlet Extra—(IG) | 100 |
| 278 | — | Benzo Fast Rubine BL—(IG) | 200 |
| 288 | 256 | Sulphon Cyanine G—(IG) | 300 |
| 316 | 273 | Diazamine Blue BR Conc.—(S)<br>Diaminogene Blue NA—(C) | 4,422 |
| 317 | 274 | Black Extra—(IG) | 300 |
| 319 | — | Benzo Fast Heliotrope 2RL—(IG)<br>Direct Fast Heliotrope BL—(By) | 412 |
| 324 | — | Diazo Brilliant Orange GR Extra—(IG) | 300 |
| 325 | — | Diamine Fast Violet FFBN—(IG) | 300 |
| 326 | 279 | Benzo Fast Scarlet 2BS—(IG) | 400 |
| 327 | 279 | Benzo Fast Scarlet 4BS—(By) | 477 |
| 349 | — | Chlorantine Fast Yellow 4GL—(I) | 1,102 |
| 357 | 300 | Brilliant Carmine L Conc.—(IG) | 300 |
| 368 | 306 | Ignamine Orange 3G—(IG) | 200 |
| 376 | 313 | Congo Rubine BG—(IG) | 100 |
| 409 | 339 | Diamine Orange B—(IG) | 1,000 |
| 425 | 346 | Minaxo Red 3BX—(IG) | 100 |
| 430 | — | Polar Red R Conc., RS Conc.—(G) | 2,756 |
| 436 | 358 | Chloramine Red 8BS—(IG)<br>Toluylene Red Powder—(AG) | 911 |
| 440 | 360 | Ignamine Orange R—(IG) | 400 |
| 441 | — | Chromocitronine R—(DH) | 220 |
| 451 | 366 | Deltapurpurine 5B—(IG) | 250 |
| 459 | 373 | Diamine Orange F—(IG) | 650 |
| 487 | 400 | Acid Milling Red R Conc.—(G)<br>Brilliant Milling Red R—(IG)<br>Wool Fast Red 3B—(IG) | 2,854 |
| 488 | 404 | Diamine Yellow N Powder—(IG) | 100 |
| 532 | — | Diazo Fast Green BL—(IG) | 50 |
| 577 | 457 | Trisulphon Brown GG Conc.—(S) | 3,000 |
| 595 | — | Diazo Yellow G—(By) | 100 |
| 596 | 476 | Benzo Chrome Brown G—(IG) | 100 |
| 621 | 11 | Chloramine Orange G—(IG) | 100 |
| 628 | 206 | Diphenyl Catechine G Supra—(G) | 2,205 |
| 636 | 19 | Fast Light Yellow 3G—(IG) | 300 |
| 649 | 26 | Triazogene Orange R Powder—(IG) | 100 |
| 653 | — | Pyrazol Orange G Conc.—(S) | 2,000 |
| 658 | 496 | Basic Blue 6G—(By)<br>Rhoduline Blue 6G—(IG) | 1,560 |
| 664 | 501 | Acronol Brilliant Blue—(BDC) | 120 |
| 667 | 503 | Benzyl Green B—(I)<br>Erioviridine B Supra—(G)<br>Poseidon Green SGX—(IG) | 2,102 |
| 671 | 506 | Erioglaucine AP—(G)<br>Kiton Blue L—(I) | 2,756 |
| 673 | 508 | Xylene Blue AS Conc.—(S) | 2,000 |
| 677 | 512 | Diamond Magenta I—(IG) | 90 |
| 680 | 515 | Methyl Violet NFB—(IG) | 1,000 |
| 681 | 516 | Crystal Violet Extra—(IG) | 600 |
| 704 | 536 | Alkali Blue 3R Conc.—(IG) | 500 |
| 710 | 541 | Brilliant Sky Blue 5G—(IG) | 100 |
| 712 | 543 | Acid Blue V Conc.—(Q)<br>Patent Blue V—(IG) | 1,110 |
| 714 | 545 | Acid Blue A Conc.—(Q)<br>Patent Blue A—(IG)<br>Patent Blue A—(Q)<br>Poseidon Blue BR Extra—(IG) | 2,161 |
| 715 | 546 | Blue Extra FF—(IG)<br>Cyanol Extra—(C) | 2,230 |
| 718 | 549 | Brilliant Chrome Violet 4B Powder—(DH) | 220 |
| 720 | 551 | Eriochrome Azurol BC—(G) | 2,205 |
| 723 | 554 | Chromazurol S Conc.—(G) | 1,102 |
| 729 | 559 | Basic Pure Blue BO—(B)<br>Victoria Pure Blue BO—(IG) | 2,551 |
| 735 | 564 | Poseidon Green VGGX—(IG) | 100 |
| 748 | 579 | Sulpho Rhodamine B Extra—(IG) | 100 |
| 749 | 573 | Rhodamine B Extra (s. s.)—(IG)<br>Rhodamine B Extra (s. s.)—(Q)<br>Rhodamine B Extra Base (s. s.)—(IG) | 4,210 |
| 750 | 572 | Rhodamine G Extra (s. s.)—(I) | 551 |
| 758 | 582 | Erio Fast Fuchsine BBL—(G) | 551 |
| 786 | — | Auracine G Base—(IG) | 50 |
| 788 | 603 | Phosphine Orange—(G)<br>Rhoduline Orange NO—(IG) | 410 |
| 793 | 606 | Leather Yellow GC—(G)<br>Phosphine 3R—(IG) | 3,220 |
| 795 | 607 | Runic AL Conc.—(IG) | 1,000 |
| 797 | 608 | Patent Phosphine GRNTN—(IG)<br>Patent Phosphine RRDX—(IG) | 3,350 |

| Col. Index No. | Schultz No. | Name of Dye and Mfr. | Quantity (pounds) |
|---|---|---|---|
| 800 | 612 | Quinoline Yellow (spirit soluble)—(S) | 100 |
| 801 | 613 | Quinoline Yellow Conc.—(S) | |
| | | Quinoline Yellow Extra—(IG) | 2,200 |
| 815 | 618 | Basic Yellow T—(IG) | 750 |
| 833 | — | Benzyl Fast Blue GL—(I) | |
| | | Wool Fast Blue BL—(IG) | |
| | | Wool Fast Blue GL—(IG) | 2,951 |
| 851 | 690 | Diphene Blue R—(IG) | 2,000 |
| 853 | — | Acid Cyanine BF—(IG) | 500 |
| 861 | 699 | Induline NN—(IG) | 50 |
| 865 | 700 | Nigrosine T—(IG) | 500 |
| 873 | 681 | Direct Gray R Paste—(G) | 1,499 |
| 875 | 923 | Fur Black DG—(M) | 500 |
| 879 | — | Chromazurine E—(DH) | |
| | | Chromazurine G—(I) | 440 |
| 884 | 627 | Chromacetine Blue S Extra—(DH) | 441 |
| 892 | 635 | Modern Violet—(DH) | 1,102 |
| 894 | 673 | Gallamine Blue Extra Paste—(G) | 3,064 |
| 898 | — | Fast Green G—(IG) | 100 |
| 905 | 645 | Gallazine No. 90—(DH) | 221 |
| 913 | 653 | Danubia Blue BX—(IG) | 250 |
| 922 | 659 | Methylene Blue B Conc.—(IG) | 25 |
| 926 | 661 | Thionine Blue GC—(IG) | 200 |
| 927 | 663 | New Methylene Blue NS Conc.—(S) | 1,175 |
| 969 | 748 | Hydron Blue R Powder (s. s.)—(IG) | 667 |
| 971 | 748 | Hydron Blue G Powder (s. s.)—(IG) | 333 |
| 1019 | 774 | Alizarine Black S Paste—(IG) | 944 |
| 1027 | 778 | Alizarine Paste Bluish—(I) | |
| | | Alizarine Red VI Extra Pure—(IG) | 19,390 |
| 1034 | 780 | Alizarine Red S Powder—(Q) | 1,100 |
| 1035 | 782 | Alizarine Brown HD Paste—(IG) | 300 |
| 1045 | 787 | Alizarine Bordeaux BB Paste—(By) | 399 |
| 1054 | 858 | Alizarine Light Blue B—(S) | |
| | | Alizarine Light Blue B Conc.—(S) | 6,000 |
| 1073 | 852 | Alizarine Irisol R Powder—(IG) | 200 |
| 1075 | 856 | Alizarine Blue AS—(By) | 110 |
| 1080 | 853 | Special Violet B—(IG) | 400 |
| 1084 | 854 | Alizarine Viridin FF Paste—(IG) | 1,072 |
| 1085 | 862 | Alizarine Blue Black B Powder—(IG) | 200 |
| 1088 | 855 | Alizarine Blue SKY Powder—(By) | 440 |
| 1089 | 861 | Anthraquinone Blue SR Ex. Powder—(IG) | 250 |
| 1091 | — | Alizarine Rubine GW Powder—(By) | |
| | | Anthra Rubine B Powder—(K) | 411 |
| 1092 | — | Alizarine Geranole B Powder—(IG) | 941 |
| 1095 | 759 | Anthra Yellow GC Paste—(B) | |
| | | Anthra Yellow GC Paste—(IG) | |
| | | Anthra Yellow GC Paste Fine—(IG) | |
| | | Anthra Yellow GC Dbl. Pst. (s. s.)—(B) | |
| | | Anthra Yellow GC Powder (s. s.)—(IG) | |
| | | Anthra Yellow GC Powder (s. s.)—(IG) | |
| | | Vat Yellow GC Powder (s. s.)—(B) | 14,529 |
| 1096 | 760 | Cibanone Golden Orange G Pdr. (s. s.)—(I) | |
| | | Vat Golden Orange G Powder (s. s.)—(IG) | 4,320 |
| 1097 | 761 | Vat Orange RRT Paste—(IG) | |
| | | Vat Orange RRT Paste Fine—(IG) | 4,755 |
| 1099 | 763 | Vat Dark Blue BOA Paste—(B) | 951 |
| | | Vat Dark Blue BOA Paste Fine—(IG) | 1,453 |
| 1102 | 765 | Vat Black B Paste—(B) | |
| | | Vat Black BB Dbl. Pst. (s. s.)—(B) | 1,990 |
| 1104 | 767 | Vat Brilliant Violet RR Paste Fine—(IG) | 2,000 |
| 1108 | 839 | Vat Blue RK Paste—(IG) | 200 |
| 1109 | 840 | Vat Blue 3G Powder (s. s.)—(IG) | 1,000 |
| 1110 | 841 | Vat Blue GGSZ Dbl. Pst. (s. s.)—(IG) | 1,000 |
| 1113 | 842 | Indanthrene Blue GCD Dbl. Pst. (s. s.)—(B) | |
| | | Vat Blue GCD Dbl. Pst. Fine (s. s.)—(IG) | 5,384 |
| 1115 | 843 | Cibanone Blue G Paste—(I) | |
| | | Cibanone Blue G Powder (s. s.)—(I) | 6,061 |
| 1116 | 847 | Vat Green BB Powder (s. s.)—(IG) | 1,600 |
| 1118 | 849 | Vat Yellow G Dbl. Pst. Fine (s. s.)—(IG) | 3,964 |
| 1133 | 819 | Algol Brilliant Red 2B Powder (s. s.)—(By) | 800 |
| 1135 | 820 | Vat Brilliant Violet RK Paste—(IG) | 500 |
| 1143 | 827 | Anthra Claret R Powder (s. s.)—(IG) | 800 |
| 1150 | 833 | Grelanone Olive B Powder (s. s.)—(GrE) | |
| | | Vat Olive B Paste—(GrE) | 869 |
| 1151 | — | Vat Brown BR Paste—(GrE) | |
| | | Vat Brown R Paste—(IG) | |
| | | Vat Brown R Paste—(By) | |
| | | Vat Brown R Powder (s. s.)—(IG) | 4,271 |
| 1152 | — | Vat Brown G Paste—(By) | |
| | | Vat Brown G Paste—(IG) | |
| | | Vat Brown G Powder (s. s.)—(By) | 2,217 |
| 1155 | 825 | Algol Red B Paste—(IG) | 397 |
| 1161 | 871 | Vat Red Violet RRK Paste Fine—(IG) | 250 |
| 1162 | 831 | Vat Red RK Powder (s. s.)—(IG) | 800 |
| 1163 | 832 | Vat Violet BN Paste—(IG) | 487 |
| 1169 | 792 | Cibanone Orange R Powder (s. s.)—(I) | 3,528 |
| 1184 | 881 | Brilliant Indigo 4B Paste—(IG) | |
| | | Brilliant Indigo 4B Paste Fine—(IG) | |
| | | Brilliant Indigo 4B Powder (s. s.)—(IG) | |
| | | Brilliant Indigo 4B Powder (s. s.)—(B) | 12,315 |
| 1187 | — | Ciba Brown R Powder (s. s.)—(I) | 880 |
| 1188 | 884 | Brilliant Indigo BB Paste—(IG) | 2,572 |
| 1189 | 887 | Brilliant Indigo 4G Paste Fine—(IG) | 1,000 |
| 1190 | 885 | Brilliant Indigo B Paste—(IG) | 4,334 |
| 1196 | 890 | Ciba Yellow G Paste—(I) | 220 |
| 1207 | 912 | Anthra Red B Paste Fine—(IG) | |
| | | Ciba Pink B Paste—(I) | 1,602 |
| 1211 | 910 | Helindone Pink AN Paste—(IG) | |
| | | Helindone Pink BN Paste—(IG) | |
| | | Helindone Pink BN Paste—(M) | 2,161 |
| 1212 | 918 | Thioindigo Red 3B Powder (s. s.)—(K) | |
| | | Vat Red Violet RH Powder (s. s.)—(IG) | 2,675 |
| 1217 | 913 | Helindone Orange R Paste—(IG) | |
| | | Helindone Orange R Powder (s. s.)—(IG) | |
| | | Hydron Orange RF Paste—(IG) | 2,300 |
| 1218 | 915 | Vat Scarlet R Paste—(IG) | 1,000 |
| 1227 | 904 | Helindone Brown G Powder (s. s.)—(IG) | 350 |
| 1228 | 907 | Anthra Scarlet 2G Powder (s. s.)—(B) | |
| | | Thioindigo Scarlet 2G Paste—(IG) | 1,040 |

## UNIDENTIFIED DYES

### Acid Dyes

| Name of Dye and Manufacturer | Quantity (pounds) |
|---|---|
| Acid Leather Brown EGB, ER—(IG) | 100 |
| Acid Rhodamine BG—(IG) | 400 |
| Acid Violet C 10B—(IG) | 80 |
| Alizarine Direct Violet E2F—(IG) | 50 |
| Alizarine Light Blue LR Conc.—(S) | 500 |
| Alizarine Supra Blue R—(IG) | 100 |
| Alkali Fast Green 10G—(IG) | 300 |
| Brilliant Milling Blue B—(IG) | 1,250 |
| Brilliant Silk Blue B—(I) | 110 |
| Brilliant Wool Blue FFR Extra—(IG) | |
| Brilliant Wool Blue FFR Extra—(By) | 2,460 |
| Cloth Fast Red 3B—(I) | 330 |
| Cloth Fast Violet R—(I) | 110 |
| Erio Fast Brown R—(G) | 55 |
| Fast Jasmine G Conc.—(G) | 165 |
| Guinea Light Blue A—(AG) | 500 |
| Indocyanine B—(A) | |
| Indocyanine FF—(IG) | 2,705 |
| Ink Blue BITBN—(IG) | 500 |
| Lanasol Orange 2R—(I) | 331 |
| Metanil Red 3B Extra—(IG) | 100 |
| Minaxo Acid Brown G—(IG) | 100 |

(*Continued on page 754*)

# Proceedings of the American Association of Textile Chemists and Colorists

## The American Association of Textile Chemists and Colorists

*President*
LOUIS A. OLNEY
Lowell Textile School, Lowell, Mass.

*Vice-Presidents*
E. H. KILLHEFFER—WALTER S. WILLIAMS

*Secretary*
WALTER E. HADLEY
5 Mountain Avenue, Maplewood, N. J.

*Treasurer*
WINTHROP C. DURFEE
516 Atlantic Avenue, Boston, Mass.

*Councilors*

RALPH F. CULVER — GEORGE A. MORAN
ARTHUR E. HIRST — HUGH CHRISTISON
WILLIAM R. MOORHOUSE — WALTER M. SCOTT

LOCAL SECTIONS AND THEIR OFFICERS

*Northern New England Section—*
Harold W. Leitch, Chairman, Franklin Mills, Franklin, N. H.
A. K. Johnson, Secretary, Lowell Textile School, Lowell, Mass.

*Rhode Island Section—*
John Hutton, Chairman, Glenlyon Print Works, Phillipsdale, R. I.
Albro N. Dana, Secretary, Franklin Process Co., Providence, R. I.

*New York Section—*
Samuel L. Hayes, Chairman, Bronx Finishing Corporation, New York City
Philip H. Stott, Secretary, Newport Chemical Works, Inc., Passaic, N. J.

*Philadelphia Section—*
William Ralph MacIntyre, Chairman, Eddystone Print Works, Eddystone, Pa.
Percival Theel, Secretary, Philadelphia Textile School, Philadelphia, Pa.

*Piedmont Section—*
H. A. Barnes, Chairman, Proximity Print Works, Greensboro, N. C
Dyer Moss, Secretary, Newport Chemical Works, Greenville, S. C

*South-Central Section—*
P. F. O'Neill, Chairman, Standard-Coosa-Thatcher Co., Chattanooga, Tenn.
J. Baynard Smith, Secretary, Chattanooga, Tenn.

*Lowell Textile Junior Section—*
John V. Killheffer, Chairman; Earl W. McLean, Secretary.

## OCTOBER MEETING OF THE NEW YORK SECTION

The October meeting of the New York Section of the American Association of Textile Chemists and Colorists was held on Friday, October 21, at the Machinery Club, New York City, and was attended by fifty-five members and guests for the usual informal dinner. The total attendance for the meeting proper was about seventy.

Chairman Hayes called the meeting to order at 8.15, and the minutes of the September meeting were read and approved. In the absence of Mr. Sokolinski, the Treasurer's report was passed. Mr. Herrmann, Chairman of the Program Committee, presented his report telling of plans for the future, and Mr. Hayes then introduced Dr. W. P. Cohoe, of Cohoe Processes, Inc., who gave a most interesting talk on a new piece-dyeing machine. A working model of this machine was demonstrated and much interest was evinced in this. Dr. E. H. Killheffer spoke of the plans being made for the annual meeting to be held in New York early in December. The second speaker of the evening was A. W. Buhlmann, who spoke on recent developments in the mechanics of skein dyeing.

The meeting was adjourned at 9.50 p. m. with a rising vote of thanks to the speakers for their very interesting and instructive talks.

The introduction of the speakers and their papers are published below:

*Chairman Hayes*—I am forced to repeat the time-worn platitude, and to show its falsity, that there is nothing new under the sun. My mind goes back to one Friday afternoon last March when I received an invitation to go up to Hastings-on-the-Hudson and see Dr. Cohoe and his new machine. It was the afternoon of our March meeting, and I left the plant thinking that I would go up there and spend about half an hour, then come back down, sign my mail and get down to our meeting by seven o'clock. I think it was about a quarter to seven when I left Hastings. I missed the meeting, but I enjoyed myself thoroughly that afternoon up there.

I really feel that it is, to the best of my knowledge, the only real new idea in the dyeing of piece goods that has been brought forward for a great many years.

I take great pleasure in introducing Dr. W. P. Cohoe, of the Cohoe Process, Inc., Hastings-on-the-Hudson. (Applause.)

[Dr. Cohoe talked on the subject "A New Piece-Dyeing Machine," but requested that none of his remarks be reported.]

*Chairman Hayes*—It is unnecessary for me to say that we have all enjoyed Dr. Cohoe's very interesting talk and demonstration. Our actions speak louder than anything I might say.

In line with Dr. Cohoe's paper and his mention of the use of oxidizing agents, there has been some study made of this subject and we are going to have an extra paper presented to us to-night, more or less in the nature of a surprise, but it will help us to round out the evening. I am going to call on Mr. Harkins, of the Newport Chemical Works, Inc.

## Ammonium Persulphate for Oxidation

By A. T. Harkins
*Newport Chemical Works, Inc.*

Mr. Chairman and Gentlemen: In the course of Dr. Cohoe's paper he spoke of ammonium persulphate as an oxidizing agent. In compliance with a suggestion about that made to us, we have been conducting investigations with ammonium persulphate. I shall ask Dr. Cohoe's permission to give the results of our investigation.

This chemical, which is already used for oxidation in other industries, seems to have quite considerable value in connection with the oxidation of dyeings made with vat dyestuffs. Its use for this purpose would replace the use of such other oxidizing chemicals as chrome acid, perborate, peroxide, etc.

Ammonium persulphate has the chemical formula $(NH4)_2S_2O_8$. It dissolves in twice its own weight of water. When its aqueous solution is heated it liberates oxygen. It is much less alkaline than sodium perborate, and also much more rapid in its action. The following table illustrates this point:

Oxidation Carried on at a Temperature of 75 Deg. Fahr.

| | *Time required for complete oxidation.* (minutes) |
|---|---|
| 0.5% ammonium persulphate | 15 |
| 1% ammonium persulphate | 10 |
| 2% ammonium persulphate | 5 |
| 2% sodium perborate | 25 |

Oxidation Carried on at a Temperature of 120 Deg. Fahr.

| | |
|---|---|
| 0.5% ammonium persulphate | 12 |
| 1% ammonium persulphate | 8 |
| 2% ammonium persulphate | 3 to 4 |
| 2% sodium perborate | 25 |

The above table was obtained using dyeings of Anthrene Yellow G in the experiment; in other words, a color that reduces very easily and requires more time for complete oxidation than do many of the other colors in the series. Similar tests were carried out using other typical colors in the vat dye series, such as Thianthrene Pink FF, Anthrene Golden Orange RRT, Anthrene Jade Green, and in each instance the oxidation was complete in five minutes using ammonium persulphate as against twenty-five minutes for the same conditions of temperature and operation with sodium perborate.

Experiments were carried further, dyeing yarn in a Franklin Process machine and raw cotton in a pressure-type apparatus. The results in both cases were highly satisfactory, and with raw cotton were particularly interesting. The cotton oxidized with ammonium persulphate did not have the slimy feel that is usual when perborate is used, and yet it had not lost its alkalinity and its carding qualities were not affected. By the use of ammonium persulphate the oxidation can be carried out at considerably lower temperatures than with perborate. The more rapid oxidation results in quite a considerable saving of time where a great deal of material is being processed, and at the same time we do not find that this more rapid oxidation produces any tendency toward crocking of the dyeing. It seems very likely that as the advantages of this reagent become more generally known it will be more widely used, particularly in closed-type machines. (Applause.)

---

*Chairman Hayes*—We now take a rather large jump from the realm of piece dyeing over into that of skein dyeing, an industry which has problems of its own, and which, of course, is just as important as that of piece dyeing. I am very glad to introduce A. W. Buhlmann, who will speak on "Recent Developments in the Mechanics of Skein Dyeing." Mr. Buhlmann! (Applause.)

*A. W. Buhlmann*—Gentlemen of the American Association of Textile Chemists and Colorists: I consider it a privilege, and it affords me great pleasure, indeed, to be in your midst this evening.

It is the right spirit to gather from time to time, rub elbows and exchange views, ideas and experiences, and to learn from one another. I have learned something this evening, and it confirms what I have always maintained: that the textile industry is the most fascinating and the most interesting business in which a man can be engaged. I believe that with all my heart.

Why is it so fascinating? Because it presents new problems every day. Conditions change. Fashions change. We have the four seasons—spring, summer, fall and winter—and we have to prepare for each one. It keeps us busy. It keeps us going and active. It keeps us hustling.

About two weeks ago a gentleman called at my office and introduced himself as Mr. Bergengren, president and owner of a cotton spinning, weaving, dyeing, bleaching, mercerizing and finishing plant in Sweden, the largest textile establishment in Scandinavia. By the way, he had his daughter with him, a very charming young lady of about eighteen years. Mr. Bergengren said: "I have a chief engineer who knows you. He spent about ten years in America and told me when I came to New York to be sure to see you. He said you were the best posted man on textile machinery in the United States."

Did I blush! And when his daughter looked at me with her big blue eyes so peculiarly, as if she confirmed what her father said, I blushed still more.

Well, I ran a 4 by 4 box loom with the Jacquard ma-

chine in my father's mill when I was twelve years old. That was thirty-five years ago. And I have kept at it ever since. Sometimes I think the more I seem to know or think I know about a thing, the more I have to learn.

"What is your chief purpose in coming to America, Mr. Bergengren?" I asked.

He replied: "I came here principally to visit the South and see how cotton grows. I buy all of my cotton from the United States, and this is my first trip here."

I was reminded of my trip South a few years ago. I had Mrs. Buhlmann with me and my chief engineer, Mr. Baumgart. He had just installed some cotton machinery in the South, and I was going down there to inspect the installations, so we toured the country for a few days.

As we motored along we saw big fields with a plant about a foot high with red blossoms. Mr. Baumgart turned and asked, "What is that, Mr. Buhlmann?"

I said, "I am sure I don't know. We are not very far from Winston-Salem where the tobacco industry flourishes, but that doesn't look like tobacco. Chauffeur, do you know what that is?" He didn't.

We saw some more fields with this peculiar plant on both sides, acres of it. Mrs. Buhlmann also became interested and she finally said, "I know what that is. That is sweet potatoes." (Laughter.)

We reached Charlotte, North Carolina, that night and the next day continued our journey and we saw more of these "sweet potato plants." During the next day we stopped at a farmhouse to inquire our way. The farmer was in the field. I walked up to him and said, "Good morning, sir. Is this the right road to Dixville?"

"Yes, sir, the next crossroad to the right."

Then I said, "And what have you planted here?"

The farmer looked at me. He looked me over from top to bottom, took his cornpipe out of his mouth, and said, "Don't you know what cotton is? What business are you in?" (Laughter.)

I felt like sinking into the ground and for once in my life I did not have the nerve to tell that I was in the textile business. (Laughter.) I bent down and looked at that cotton plant; I smelled of it, and I said, "But it has red blossoms. You know, we are from New York. I had an idea that a cotton plant was a big white plant.

He said, "Well, this is July. You come around in the fall and you'll see it white."

I walked back to the car. Mrs. Buhlmann was quite angry and said, "Well, it is about time. What have you been talking about for so long, anyway?"

I got in the car and I said, "It was worth-while. You are supposed to be a connoisseur of vegetables. You think nobody can fool you on that, and you told me that was a sweet potato plant we had been seeing all along here. Do you know what it is? It is cotton." And I said to the chauffeur, "You said you were born in Charlotte, North Carolina? Well, you ought to be ashamed of yourself. Fourteen million bales of cotton grow here in the South annually. It is the chief industry, and still you don't know a cotton plant when you see it. Why, you wouldn't be here, and neither would I, if it weren't for cotton. And here is our chief engineer, Mr. Baumgart, who has traveled all over the world. He has been to India, to the Balkan States, to Scandinavia, and he has spent five weeks here in the South and he doesn't know what a cotton plant is."

The next lecture I gave to myself, when I got back to New York, and I guess I needed one, too.

Here is a little piece of cotton. I used to consider it a rag, good enough to wipe machinery with. Do you know what they make out of this? Sanitary diapers that the mother wraps the body of the frail baby in, shortly after it is born. So the first thing we touch in life is cotton.

Here is a little piece of white cotton plush. It is used by undertakers to line the coffin. So when our task on this planet is completed and they carry us off, with us goes a piece of cotton.

There is something else I put in my pocket before I left the office—a powder puff, also made of cotton. I have no statistics with me but, gentlemen, you would be amazed to know how many tens of thousands of powder puffs are manufactured in the United States to-day (it is an industry in itself that a few years ago we never thought of) and how many thousands of bales of cotton are consumed in the manufacture of powder puffs.

A client of mine—he claims to be the biggest manufacturer of powder puffs in this country—recently returned from a trip to Paris. I asked him if he had a good trip.

"Yes, Mr. Buhlmann," he said.

"Anything new?"

"Yes," he said, "between us two, there is something new. I will tell you something confidentially. I am making a new powder puff that is going to be six inches in diameter. You see, skirts will become shorter and the stockings will be rolled down below the knee, and I am going to make a powder puff for the knees."

That is not a very good outlook for the textile industry, but Mr. Paul Poiret who arrived on the Ile de France last Tuesday said that the fashion will not be as it is now, where the ladies are wearing skirts five inches below the knee. The coming fashion will be five inches above the ankle. That is good news for the industry.

The story of silk is also highly interesting. About

four years ago I attended a banquet given by the honorary commission of the Japanese Raw Silk Association. Robert J. F. Schwarzenbach, vice-president of the Silk Association of America, welcomed the Japanese delegates. He said, "Gentlemen, in 1870 Japan sent 300 bales of raw silk to the United States. This year America is purchasing 350,000 bales of raw silk from Japan—a thousandfold increase. Are we going to keep on in that way? It seems there is a new competitor in the field, and it is called artificial silk. Gentlemen, do you know that this year the consumption of artificial silk amounted to almost 20 per cent of the raw silk consumption, that is, the natural silk consumption? That baby may grow and perhaps within the next generation the consumption of artificial silk may be as large as that of natural silk."

I shall never forget his words. That banquet was held February 23, 1923, about four and a half years ago.

Three hundred and fifty thousand bales of raw silk —that is approximately 50,000,000 pounds of raw silk. This year we imported from Japan about 60,000,000 pounds, plus about 10,000,000 pounds from other countries (France, Italy, and so forth). That makes a total consumption of 70,000,000 pounds of raw silk, and according to the latest statistics that new baby, which changed its name in the meantime and is now called rayon, will have a production in the United States of about 70,000,000 pounds and 10,000,000 will be imported, which makes a total consumption of 80,000,000 or perhaps 100,000,000 pounds of rayon this year—considerably more than the consumption of natural silk.

But I am supposed to speak on the mechanics of skein dyeing. That is what you came to hear to-night. I just returned last night from New England where I inspected some installations, and only yesterday afternoon I thought of you gentlemen. I thought to myself: Wouldn't it be wonderful thing if I could have those men all up here and have them walk around the machine and see it for themselves, and let the machine speak for itself? That is one of the handicaps we have in the machinery business: we only have blueprints and photographs. We can't carry our machines with us. I can't do it because that machine I saw yesterday afternoon is 48 feet long. And while I was there I saw sixteen different colors dyed at one time in that machine.

I don't know whether you can see this, but I have here a little picture with colors—red, green, yellow, blue and all the different colors, one compartment after another. I call it the Multiple Porcelain Reel Skein Dyeing Machine. I will tell you about it.

. . . Mr. Buhlman then presented his prepared paper:

## The Multiple Porcelain Reel Skein-Dyeing Machine

By A. W. Buhlmann

It was just thirty years ago that I saw in a dyehouse in Switzerland the first machine where silk in the skein was dyed on a revolving porcelain reel. There was an impenetrable fog in the room; and, of course, thirty years ago, and much later than that, there were many secrets in a dyehouse. With the development of scientific dyehouse ventilation and air conditioning, some of these mysteries have been revealed.

The machine, however, looked to me like an ordinary skein-washing machine. It had twelve spindles or arms fitted with porcelain rollers, all rotating in one direction. The skeins hung on the rollers, all revolving slowly and partly submerged in a wooden tub containing the dye bath. A steam engine of the piston type would drive the machine.

About five years later I saw another machine working on the same principle in a dyehouse in Germany, but it was only after the war that this type of machine found its way into the dyehouses of this country.

In the multiple skein-dyeing machine, now commonly known in the United States as the Buhlmann machine, we have the same fundamental principle, which is a rotating porcelain reel, but the rotating motion is not only concentric but also eccentric. In other words, a gentle up-and-down motion is obtained and we accomplish just exactly what the men at the hand dye tubs do when they lift the skeins off the dye sticks with their fingers. Furthermore, the porcelain rollers reverse at intervals, running in one direction and then in the other, so that if some threads or part of the skeins have advanced or shifted a little they are brought back again when the rollers reverse.

### Arrangement of the Rollers

A machine may consist of a series of groups or units, from one to ten or more rollers each. To facilitate loading and unloading—i. e., placing the skeins on the rollers and removing the same—each group or unit has its hoisting device with hydraulic pressure. Consequently, we have a series of any desired number of individually and independently operating dyeing machines, yet there is only one drive or head and one motor for the whole machine. Two longitudinal shafts run from the main drive, on which worms are mounted, and each group or unit has its corresponding worm gear that meshes into the worm and transmits the rotating motion to the arms with the porcelain rollers. This makes it possible to dye a batch of yarn —say, 10 pounds—on one unit only, without disturbing, so to speak, all the other sections. They are hoisted up, disconnected.

Without going into any details of the many changes,

improvements and refinements that have been made on this machine in the past eight years, the gradual development of the dye tubs is also of interest. A wooden tub was used first, about the same size as hand tubs, and each group or unit had its dye tank.

It was quickly realized that a much smaller dye bath would answer the purpose, and instead of a 24 to 26 inch deep tub, which is still used for hand dyeing, a 15-inch deep tub took its place. It saved water, dyestuffs, steam and time for boiling up. Wooden tubs are hard to clean, and it was necessary to have tubs for light and also for dark shades. Then came copper tubs, which answered the purpose much better, and in the last four or five years most installations have been made with Monel-metal tubs.

To boil up the dye bath, a swing pipe connected to the steam line with a perforated bronze head was used and the dyer would move it around in the tub. Now we have perforated steam coils right in the tanks and with controlling valve.

### Development of the Apparatus

The original purpose of this machine was to dye small lots; and, as said before, each unit had its individual dye tub, and the limit of the size of the batch to be dyed was governed by the number of rollers of each unit. "If we had several sets of tanks," said a dyer one day, "we could replace a number of small tanks by a big one and operate several units in this big tank and thereby dye bigger lots." The idea seemed to be a good one and was carried out. The dye tanks had castors to facilitate moving them around, but we soon realized the impractical part of the scheme—i. e., the big investment of these exchangeable copper tanks and the extra floor space they required. The ideal solution would be to have one big tank for the whole machine, with a partition plate between each unit or section which could be taken out so that any number of units, or all of them if necessary, could be operated in the same dye bath. This would permit to dye lots of any size, limited only by the size of the machine itself—i. e., the number of porcelain rollers of the same. We have also accomplished this and there are now machines in operation which permit to dye from 10 to 400 pounds of yarn on each side of the machine, a total capacity of 800 pounds when fully loaded, say, in sixteen lots of 50 pounds each and all in a different color.

The outstanding characteristics of this machine are the following:

Enormous saving of labor and space, great flexibility, because one can dye lots of any size, and visibility, because a man can see every skein or yarn in the entire machine.

In conclusion, allow me to express my gratitude to the members of the American Association of Textile Chemists and Colorists for the many suggestions and the assistance they have given me, especially to you gentlemen who are present this evening. It is with your help that this machine has been developed as it is to-day.

---

*Chairman Hayes*—Are there any questions you would like to ask Mr. Buhlmann? There are a good many skein dyers here to-night, I believe.

If there are no questions, I will ask if there is any more business to come before the meeting?

We are certainly indebted to the men who have spoken here to-night, at a great deal of sacrifice to themselves, and just before we adjourn I should like to ask for a rising vote of thanks.

. . . A motion was made, seconded, and carried that a rising vote of thanks be extended to the two speakers of the evening. . . . (Applause.)

---

## OCTOBER MEETING OF SOUTH-CENTRAL SECTION

The South-Central Section of the American Association of Textile Chemists and Colorists met Saturday evening, October 1, at Signal Mountain Inn, Sigral Mountain, Tenn., with an attendance of about thirty-five. The meeting was called to order by Chairman P. F. O'Neill.

The By-Laws Committee made a report and the by-laws prepared by them were approved and adopted. A report of the Consultation Committee, which was appointed by the chairman, was made by the chairman, it being the opinion of the members of this committee that neither their names nor the names of those seeking information be revealed, as it would possibly cause some restraint to both those seeking and those giving information.

After some discussion it was finally agreed to handle the proposition in the following manner: All questions or problems be sent the secretary who would in turn forward them to the chairman of the Consultation Committee, not revealing the name of the questioner. The chairman, upon getting proper information to the question or problem through a member of the committee qualified to give it (each branch of the textile industry is represented on the committee by men of long experience) to return it to the secretary, who would forward it to the proper person. In this way the secretary would be the only one knowing the names of the individuals involved.

All those in attendance thought this a very good plan, and one that would be beneficial to the section. It was also suggested that all questions proving of interest be sent along with the answers to the American Dyestuff Reporter for publication.

No further business coming up, the following papers were given:

Proceedings of the American Association of Textile Chemists and Colorists

# Introduction to a Discussion on the Testing of Sulphur Colors

By L. L. Bamberger
*Resident Manager, Cedartown Branch, United States Finishing Company*

Before an audience such as this there is no need to emphasize the importance of the so-called sulphur colors, to point out the immense tonnage manufactured and used yearly, nor to enlarge on the properties of these dyestuffs as a class. Most of us are familiar with these facts, yet we do not realize that the sulphur colors are perhaps the least understood class of synthetic coloring matters, not excepting the vat dyestuffs.

The sulphur colors have been rightly called the "stepchild of the dyestuff family." The constitution of the most intricate of other classes of dyestuffs is well known, but the best authorities are rather hazy about the chemistry of the sulphur colors and no satisfactory theory has been advanced to explain their dyeing properties. Their development has leaned to the empirical side, and even to-day their manufacture is not on as satisfactory basis as other classes of colors from a scientific standpoint.

## Difficulties of Testing

These colors, standing as a class between the direct and the vat dyes, seem to partake of some of the bad points of each. Not the least of these bad points lies in the difficulty in testing the sulphur colors, and particularly in reconciling the accurately done laboratory testing with the results obtained in the practical operations of dyeing.

The testing of dyestuffs in the laboratory is not especially easy, requiring a fair amount of manipulative skill and long experience to obtain good results. In some cases it is possible to use strictly quantitative methods, such as the titration of the azo colors with titanous salts; but in most cases, and particularly in the case of the sulphur dyes, complete reliance must be placed on carefully controlled laboratory dye tests. These tests almost invariably consist of small-scale dyeings usually made as a comparison, under identical conditions, of a known or standard product against an unknown or variable one. These tests as made by experienced operators are remarkably accurate, reaching at least a degree of precision which gives rise to errors smaller than differences detectable by the human eye.

The details of the actual dye testing of sulphur colors vary somewhat in different laboratories, but essentially they are the same. A standard amount of color is weighed very accurately with a definite amount of alkali and is brought as nearly as possible into perfect solution with an excess of sodium sulphide. After complete solution is effected, the dyestuff bath is adjusted to a certain predetermined concentration and an accurately weighed amount of raw-stock yarn or cloth is entered and worked in the bath at constant temperature for a standard time, usually one hour. During the course of the dyeing, either common or Glauber salt is usually added to aid exhaustion, but in some laboratories this is omitted. At the end of the standard dyeing period the yarn or cloth is removed, washed, after-treated and dried.

It has been noted in many cases that when practical dyeing has been done at lower temperatures than the boil, many sulphur colors have shown better results than dye tests carefully made at the usual standard temperature of 210 to 212 degrees. Like the vat dyes, most sulphur colors reach their maximum dyeing efficiency at a definite temperature and this is one reason why some colors which show good performance in self shades act so badly in mixtures.

## Use of a Standard Temperature

While many laboratories test all sulphur colors by a fixed formula at the same temperature, this is undoubtedly a mistake, particularly in the case of the dyeing temperature. It is dangerous to give group treatment of this class of colors; but if for the sake of uniformity of procedure it is desired to adopt a standard temperature many believe that a figure of 180 deg. Fahr. is more nearly correct than the time honored boiling temperature. Both laboratory and practical experiments show that many sulphur colors dye to better advantage at this temperature, while in the case of those which do give better results at the boil, the decrease in efficiency resulting from the lower dyeing temperature is usually slight. Many laboratories are now experimenting with a very much reduced time element in sulphur dye testing, and in general this procedure has proved to be a step in the right direction. Dyeing periods of ten, five or even one minute with concentrated baths have in many cases given more reliable laboratory results than the time-honored procedure of making test dyeings for an hour or more in dilute baths. Some laboratories interested primarily in piece goods have finally adopted methods which practically amount to dip tests.

We have sketched some of the factors which make it difficult to reconcile laboratory tests on sulphur colors with the results obtained in the dyehouse. Full scale experiments in actual practice are expensive and sometimes disastrous, so many attempts have been made to bridge the gap between the dye pot and full scale machinery by the use of small semi-works equipment. In the case of raw stock and yarn, when the small equipment has been an exact duplicate of the full scale machine helpful results have been obtained.

but in the case of piece goods in most cases the results have been worse than useless.

In transferring all kinds of chemical processes from small to large scale operations, there seems to be certain indefinable factors introduced by the very bulk of the large scale operation, but this effect is especially noticeable in the case of dyeing with the sulphur colors. Until we know more about them the only safe attitude is to look upon the dye test of sulphur colors strictly as an analysis, invaluable as a control in manufacture and a fairly accurate assay of the finished product, but of little or no value in predicting actual performance. For information on that point we must continue to depend on actual trial.

If this is done carefully the results obtained should be and usually are practically quantitative; and a dye test made in this way, against a known sample, might be regarded in the same manner as the analysis of a chemical against a standard of known purity. In view of this it would seem that the laboratory dye test should be the ultimate yardstick by which the value of a dyestuff is measured. With many colors this is true; but those of us who have handled the practical dyeing of sulphur colors know that grave difficulties arise in attempting to evaluate these dyestuffs from laboratory tests. Frequently dye tests indicate that a certain sulphur color is equal to or superior to another in certain respects, but in spite of the precision with which the laboratory work has been done, continued practical trials force one to the conclusion that the results obtained in the dye test cannot be sustained in actual use.

### The Factor of Solution Phenomena

Many of the differences between the behavior of sulphur colors in the laboratory and the plant are undoubtedly due to solution phenomena. These colors dissolve in the alkaline sulphide bath by partial and in some cases complete reduction to the leuco compound, and it is conceivable that there are many possible degrees of solution depending on the amount of the reducing agent present, the concentration of the dye solution, the temperature, the alkalinity of the bath and the presence of foreign matter. In many cases the laboratory dye test solution has reached the degree of dispersion most suitable for that dyestuff, in some cases it has gone beyond that point; while in actual dyeing the degree of dispersion is more than likely to be below the critical point rather than above it. In the laboratory dye test we deliberately make every condition as favorable as possible for the complete utilization of the dyeing power of the color, while in practice our ability to do this is frequently limited.

Unlike direct colors most sulphur dyes are not easily dissolved. When handling the small amount of color and sulphide used in the laboratory dye test, thorough solution is more readily obtained than in the case of the large quantities used in full-scale dyeing; and moreover the temperature during the test dyeing is more likely to remain at the desired point throughout the small amount of yarn or cloth than in the much larger quantities handled in practical work.

In some cases laboratory dye tests have been made on bleached fiber and later these have naturally been found to be far out of line with results obtained on unbleached material in practice. The natural impurities in cotton have a decided effect on sulphur colors apparently very marked in the case of certain members of the group and almost negligible in others.

In many laboratories it is the rule to make test dyeings of all sulphur colors at one temperature, usually that of the boiling water bath. This temperature is very convenient because of its easy reproducibility and the ease with which it is kept constant. In practice it is frequently impossible or not desirable to maintain this temperature, and this naturally gives rise to different results from those obtained in the laboratory.

---

### Discussion on Dye-Testing Sulphur Colors

*Mr. Carter*—A great many are experimenting with very short dyeing periods and high concentrations of dye in the testing of sulphur colors. I have here samples which were dyed by dipping, one for only four minutes and one for one and one-half minutes. The mill which made these tests claims that they are more reliable than dyeings made for an hour or one-half hour, and they are experimenting with even shorter times. I will be glad to show these dyeings to anyone who may be interested.

*Mr. Bamberger*—I am very glad to see these samples and believe these people are on the right track, at least as far as piece goods dyeing is concerned.

*Mr. McNab*—I remember well when the sulphur colors first came out we had some very peculiar experiences. We had a Sulphur Black to dye and got no results at all, and finally found that it could only be dyed by keeping the work away from the light; in fact, we not only had to keep it away from the light but had to use an under-water jig. I wonder if anyone else had this experience and what caused it.

*Mr. Bamberger*—I have never heard of this particular difficulty, but the early sulphur colors were very impure, and if the color value was destroyed by exposure to light it must have been due to the action of some impurity which was catalyzed by light. It is more likely that the trouble was caused by premature oxidation by the air.

*Mr. Hartley*—The first sulphur dyes were very impure,

and the only way that a good Sulphur Black could be dyed at that time was to age it in a steam box.

*Mr. Bamberger*—There seems to be no information available as to the sensitiveness of sulphur colors to salting. In other words, some colors during the process of dyeing show but little increase in depth of shade on the addition of salt to the bath, while others show a very great increase in depth. When using a color for the first time it would be of great benefit to the dyer to know just what to expect from the behavior of the color when salt is added to the dye bath.

*Mr. O'Neill*—The time is coming when we will be called upon to dye more sulphur colors for hosiery mills. The surest method is to follow as closely as possible the instructions of the dyestuff people. They subject the dyestuff to all kinds of tests and find out the best way to handle them. When they say to dye at 160 deg. Fahr., we should use that temperature.

*Mr. Shroeder*—The problem is simple when dyeing a shade obtained with a single color; in that case the exact procedure recommended by the manufacturer can be followed. In actual practice the shade usually needs three or four colors and no two of these need exactly the same treatment.

*Mr. Sheffield*—In dyeing piece goods in the continuous machine using a combination of two browns, a yellow and a black, it is possible to vary the shade produced at will, either toward the red or green side by simply raising or lowering the temperature of the dye bath fifteen or twenty degrees. This will give some idea of just how sensitive some sulphur colors are to variation in dyeing temperature.

*Mr. Carter*—Dyeing sulphur colors at 150 to 160 deg. Fahr. often obtains better results than at 180 to 200 deg. Fahr. To-day there is no need to dye at the boil as was the case in the past.

*Mr. Bamberger*—While speaking about dyeing troubles some mention should be made of the use of the so-called "Western" or "Sledded Cotton." We probably all know that from last year's crop from 800,000 to 1,000,000 bales were gathered by the process of sledding. This operation is carried out when the bulk of the fiber in the field is ripe, but invariably the top bolls which have not completely opened will contain some unripe or dead fiber. The sledding operation itself is carried out as follows:

A wooden sled or drag carrying steel prongs on the front is dragged by mules down the rows pulling up the entire plant—bolls, leaves, stem and roots. This mass, which looks like hay, is piled up and given several preliminary operations which roughly separate the bolls from the remainder of the plant. The cotton is given several extra operations at the gin and goes to the mill containing much more than the normal amount of leaf, stem and trash. At the mill it is impossible to remove many of these impurities which are apparent as defects in the finished cloth or yarn. Cotton mill men have been giving much thought to the processing of this type of cotton, but even admitting that the mechanical problems involved can be overcome, which is doubtful, the fact remains that yarn or cloth made from this fiber is bound to contain unripe or dead fiber which cannot be dyed resulting in white or light colored specks in the yarn or cloth.

The agricultural magazines have encouraged the farmers to gather the cotton crop by this method wherever possible on account of the great saving to be made in the cost of picking. If this practice is not discouraged more and more cotton will be gathered this way where conditions are favorable for it, and eventually someone must use it. We can all do the industry a big service in discouraging the use of sledded cotton wherever possible.

## Chasing Troubles in the Dyehouse*

By Noel D. White

*Dyer, Davenport Hosiery Mills, Chattanooga, Tenn.*

I can't see why I should be called upon to make a speech when I never made one in my life. The only attempt I ever made resulted in a failure, and here is how it happened:

It was at the beginning of the war, and I was in Waltham, Mass., at a lodge meeting. We have been invited to attend a "blow-out" they were going to have in another lodge of the same order, and as this lodge was organized by Frenchmen and Italians, I was to speak on the relations of the Italian nation in regard to the war; I was to give my opinion about Italy entering the war with the Allies.

I had one week's time in which to prepare a speech, and said I would do what I could. A few days after a friend of mine who belonged to the other lodge came to see me, and asked me if it was true that I was going to speak at the joint meeting. I said it was, and told him the subject of my talk; but, I said, I did not know that I could do much good as I had never made a speech before. He asked me to show him my notes, as he wanted to make sure I was not going to hurt anyone's feelings, as the members were of so many nationalities and I should not embarrass anyone with my speech. I thought that it was very nice to advise me that way, and I gave him my prepared notes. He took them home with him, saying he would return them the next day, but I did not see him any more until the night of the blow-out when he returned my speech, saying it was very nice and had nothing to correct; he also had a speech to make, and was one of the first to be called upon because he had to leave

*Paper presented before the October meeting of the South-Central Section, held at Signal Mountain, Tenn., October 1, 1927.

early that evening, so he said. You can imagine my surprise when I heard him deliver my speech in its entirety, not a word changed. Just as I had given it to him, he had copied it, and returned my copy. As soon as he finished his reading he left the hall.

I did not know what to do. When I was called upon for my speech, I got up and said, "There are a lot of wicked people in this world to-day, let us bow our heads in a silent word of prayer for the salvation of their souls," and when everyone had bowed their heads, I sneaked out the nearest exit and went to look for that friend of mine.

### No Troubles to Chase

Now, I have been double-crossed here, too. Mr. O'Neill's secretary sent me a letter some time ago containing my appointment on the Arrangement Committee. I thought he should appoint someone else, so I wrote him a letter to that effect. Before he received the letter, however, I happened to see Mr. O'Neill, so I told him about it, and he assured me it was for the best and my own interest, saying that if I was not on that committee they would surely be asking me to prepare a paper to be read at the very next meeting, and being on the committee I could help choose somebody else to make the speeches and would be left out. I thought that was a good thing, and told him I would serve, and to tear up the letter declining the appointment, congratulating myself on having such a good and considerate friend.

A few days later Mr. Murray, the chairman of the Arrangement Committee, called me up on the telephone and informed me that we had to hustle and arrange a meeting as soon as possible, and that I was to prepare a lecture for that meeting, choosing my own subject, and he was so agreeable and condescending that I forgot all about the advice of Mr. O'Neill, and without thinking I promised I would do my best. As soon as I hung up the receiver, I thought about it and perceived where I had been tricked.

Well, so long as I had the choice of the subject, I thought I would prepare something I knew well, and make it as easy as possible. So when Mr. Murray called me up a few nights later to get the subject of my paper so that he could announce it on the invitation cards, I had not the slightest idea what I would talk about, but Mr. Murray said I could talk about ten or fifteen minutes, then give those interested a chance to ask questions, etc.

On the instant I had an idea that what every dyer would like to hear about was what troubles other dyers have, and how they get out of them. So I told Mr. Murray my subject would be: "Chasing Troubles in the Dyehouse." That looked easy at first, but when I got to thinking about it I could not see anything in that line that in my mind would interest anyone. Next morning I went to work and when everything was going good, I said to Joe—my assistant and a Junior Member of the Association—"Joe, I have to make a speech at the next meeting, and my subject is to be 'Chasing Troubles in the Dyehouse.' How can I chase trouble when there is no trouble to chase." "Why," Joe said, "you are so used to trouble that you do not see it any more. I could talk on that subject for a week, and yet leave a whole lot unsaid." "Well, Joe, when Bert (he is our bleach man) works in the garden in the evening and sees some angle worms wriggling and squirming in the ground and cannot withstand the temptation, he gathers a can full and prepares to go fishing. In the morning he comes in and says he has the 'flu' or his mother-in-law has the colic, and he has to go back home, leaving all his bleaches for us to finish. That is trouble for us. But, who cares about that."

Then Joe came back at me and said, "There is the boss inspector who wants to show you a lot in the finish room. Here is trouble now." And, sure enough, there was trouble. A lot full of oil spots. How did it happen? Not carelessness on our part, so let us see. In a finished lot the gores in the heels and toes are streaked with black, oil and carbon which had not been cleaned in the boiling-off. Well, I told the superintendent that all the stockings spotted in that way should be kept aside, and sent to the dyehouse separately, to be cleaned before boiling. Boiling them in makes them fast in the goods, and harder to remove afterwards, and all oil spots should be cleaned before boiling. I suggested that when the goods are trimmed and inspected in the gray room, all stockings spotted with oil in the gores, with rings in the legs, or from all causes, should be kept out of the stock and sent to the dyehouse for a special cleaning, which could be easily done before boiling. He claims it cannot be done; the inspectors are not allowed to break up a dozen by taking out spotted goods. They can take out the menders, why not the spotted ones? I will tell you what I found out once.

In a mill where I was working I was in the habit of going to the boiler room at the end of the day to talk to the fireman before the whistle blew. The sweepers at that time were usually coming in to burn the sweepings of the day, and I noticed the sweepings were mostly waste silk. The amount of it attracted my attention. I knew that waste could be sold at 60 cents or more a pound to spun-silk manufacturers, and it was a loss to the mill to burn it up.

### Trouble from Streaky Gores

One day I ventured to remark to the superintendent that he could save that waste, sell it and make money for the mill. He shook his head, and told me he had tried to sell it to someone, and was offered so little for it that it did not pay to store it. A few days later I spoke about it to one of the loom-fixers, and he told me that if they had stored all that waste and sold it by the pound, the boss would soon find out how much silk was wasted in the mill, and would not like it. I believe that same thing happens here; if they should take out all the spotted goods to be cleaned separately it would show how careless they were in the knitting room. Once they are sent to the dyehouse, all bad work would be laid to the dyer. Now, the amount of streaky gores since they started changing styles so often is really appalling. Every mill seems to be affected, and that is because every mill within the past few months has been changing from heavy to finer goods, using more needles in their machines, and I have been told that until the needles have been worn down and cleaned, trouble from black oil in the gores is unavoidable.

Maybe they all believe that to be the case, but I have found out it is not an unavoidable evil. In the last number of Cotton, a contributor offers a solution for that, and he claims that it can be avoided by simply cleaning the new needles in the proper way. I was so interested in that article that I thought you might be interested too, and I copied that piece and had our printer strike a few copies to be distributed here. You can read it, and then you can give it to your superintendent, if he hasn't already read it, and I hope you will get some good out of it:

*Preventing Oil Spots on Hose*

Oil spots on the instep of seamless hose and in the gores of the heels and toes are brought up by Contributor No. 4256 in the June issue of Knitting Kinks.

He states that this is the direct result of cleaning out the cylinders, filling them in with new needles and sinkers. He says he cleans the cylinders with gasoline and that the needles have no oil except a little on the butt for lubrication. He understands, according to his letter, that these spots are caused during the process of knitting the heels and toes, the up and down movement of the needles seeming to collect the oil and leave it on the stitches in line.

In my opinion, such oil lines or spots are caused from using a poor grade of oil, rather than from any incorrect method of using it. He said his theory is that the oil he uses carbonized. In my judgment, this carbon is caused from the parts of the machine rubbing together while in operation. I would suggest that he get a good grade of oil, such as White Rose, and clean the machine well and then wash it out with this oil, putting it on until the heel and toe does not show black. Then get a small air gun similar to that used for fly-killing liquids or other disinfectant, and spray the machine two or three times a day. I do not believe that any black spots will show up, and I know this oil will boil out.—From Cotton, September, 1927.

Now I would like to say a word about how we clean those oil spots. Of course, I know every dyer here has a process of his own. My friend, Mr. Courtney, told me how he does it successfully; he may give you his formula if you ask him. Our Charlie Rothe also has a good way; so he told me. Mr. McKenzie sells a good preparation, and that is what we use. This is how we do it: We prepare a bath in a laundry machine, that is, a machine without partition through the center, with shelf attached around the inside of the drum. We put in water, and raise it to 140 deg. Fahr., then we put in 10 per cent Radiactine. That is what Mac sells us. If we have no Radiactine we use 20 per cent of tallow soap and 2 per cent of soda ash, and soak the spotted goods in it for two or three hours, or overnight. After that start the machine, and let the goods tumble good for thirty minutes; the tumbling of the soaped goods squeezes out most of the black oil, and then we take them out and give the usual boiling off. We found that the goods are well cleaned after that.

### An Oil That Did Everything

Now, I want to tell you about another kind of trouble we had to chase in our dyehouse. We were boiling off our stockings with soap, and getting good results. One day the boss told me he would like to see some goods boiled off with some boil-off oil.

Someone had told him it was used by the largest dyehouses in the country with great success. He had a salesman talk it over with me, and we decided to give it a trial; but I had compromised into using some soap and 2 or 3 per cent of oil as an aid to the soap. As our storing facilities were limited in the dyehouse, owing to the fact that we had grown so fast, I had to give up most of our storing space to put in new dyeing machines, and I was concerned about the place to set up the new oil barrel. And as we were already using a sulphonated oil to finish our goods and in the dyeing baths, I asked the salesman if his boil-off could be used also for finishing, and in the dyeing bath. He

assured me that he had an oil that was just the thing, and I could use it in the boil-off, dyeing or finishing, just as I saw fit.

This was in the winter, and we started the new oil for all three purposes—and if in my opinion there was no improvement in our goods, there were no bad effects from it—so I kept using it until the following summer; then trouble started. With the spring, our bleaching began to get heavy and I noticed that our bleach was not as good as it should be. Brown spots which I could not account for appeared in the bleached lot. Sometimes lighter, sometimes darker, but they were always there. I found that after washing, by giving the lot a final wash with sulphuric acid, then rinsing it out, I could proceed to soap and blue it in the regular way, and the brown spots disappeared. But why should I have that extra work in order to get a good bleach? I most surely had to find the cause of those spots, and thought maybe the bleach was too hot, so I reduced the temperature of the bleach; that did not help. I blamed the soap and changed that, but when I changed the soap I also discarded the oil, and used instead 2 per cent soda ash. That returned our bleach in good condition, and we believed it was the soap that was at fault, so kept using the new soap for all our goods, and kept the oil out of our bleach, but kept on using it for all the colors, without any reason whatever for doing so. However, one day the man who does our boiling-off forgot himself, and boiled off a lot to be bleached together with a lot to be colored, and our bleached lot came out as spotted as we had them before the change in the soap.

Upon inquiring we found out the mistake our man had made, and that it was the oil that was supposed to be good in boiling-off, in dyeing and in finishing that did all the mischief. As I knew how to correct it and destroy the brown spots on the bleach, I decided to make sure and use oil once more, and, sure enough, the next lot was as spotted as I expected. When I told that salesman about the mischief he made for me by telling me the oil he sold us could be used for all purposes; he said he had an oil that was the acme of perfection for boiling off, but I told him I was off oil for life. Henceforth, soap is my only medium for boiling-off silk.

## ANNUAL MEETING OF THE PIEDMONT SECTION

The Annual Meeting of the Piedmont Section of the American Association of Textile Chemists and Colorists was held at the Southern Manufacturers' Club, Charlotte, N. C., on Saturday evening, October 15, 1927. There were 105 members and guests present at the dinner and 125 members and guests present at the meeting.

A golf tournament was held in the afternoon at the Myers Park Country Club in Charlotte. John Dabbs and J. D. Sandridge, both of E. I. du Pont de Nemours & Co., were tied for low score. Paul Haddock, of A. Klipstein Company, had the second low score; Mr. Haddock also took the low gross score. Mr. Bacon, of Southern Mercerizing Company, Tryon, N. C., returned the third low score. The prizes were presented by Mr. Willard, of the National Aniline & Chemical Company.

### Election of Officers

The election of officers was as follows: Chairman, H. A. Barnes, superintendent, Proximity Print Works; Vice-Chairman, R. W. Arrington, Union Bleachery; Treasurer, T. C. King, Cramerton Mills; Secretary, Dyer S. Moss, Newport Chemical Works, Inc.

Arrangements Committee—Chairman, Chas H. Stone, Charlotte, N. C.; W. M. Hunt, Greensboro, N. C.; B. S. Phetteplace, Greenville, S. C.

Sectional Committee—Chas. Robertson, Tom McKay, R. L. Bothwell and J. H. Purdy.

Membership Committee—R. W. Glenn, J. E. Moore, A. R. Thompson, Julian Chase and D. C. Newman.

The following papers were presented: Henry Constable, of E. I. du Pont Company—"Tendency to Faster Colors"; R. H. Southern, chemist, Proximity Mills, Greensboro, N. C.—"Practical Laboratory Methods"; Chas. W. Johnson, manager, Virginia Smelting Company, W. Norfolk, Va.—"Sulphur Dioxide in the Textile Industry."

The first two papers appear on the following pages.

The next meeting of the Piedmont Section will be held in Greensboro, N. C., about the middle of January, and it would be well for the members expecting to be there to make use of the reservation card sent out by the Arrangements Committee. At the Southern Manufacturers Club, in Charlotte, there was considerable confusion due to the fact that there were twice as many people at the dinner as had been anticipated. Signing and mailing the card sent by the Arrangements Committee will eliminate this trouble, and the dinner can be served in a more satisfactory manner.

It is to be hoped that a good number of the members in this section will find it convenient to be present at the Annual Meeting of the Association to be held in New York City, Friday evening, December 2, and all of Saturday, December 3. There is a banquet to be held on Saturday evening. The various sections were well represented at the Annual Meeting held in Charlotte last year, and the South should reciprocate with a large attendance at the meeting to be held in New York.

Respectfully submitted,

Dyer Moss, *Secretary.*

**Proceedings of the American Association of Textile Chemists and Colorists**

## The Tendency to Faster Colors*

By Henry Constable
*E. I. du Pont de Nemours & Co.*

Some twenty years ago piece goods were dyed with vegetable dyestuffs such as cutch extract, logwood, Indigo, fustic and the use of sumac, iron, bluestone; also chrome yellows, chrome oranges and chrome greens. These colors had some very good qualities, but in many instances the methods of dyeing were long and the results not always uniform.

As the coal tar dyestuffs gradually came on the market, and as they were easier to apply to the fabric, they naturally began to replace the natural dyestuffs in use, and as time advanced, better methods were worked out for their application. About this time sulphur colors were being introduced for piece goods, and this type color, when aftertreated with chrome in a number of cases, showed superior fastness to some of the vegetable or natural dyestuffs.

At a later date the introduction of vat colors began, and on the higher grade of piece goods that have to stand very rigid tests as to fastness to light, washing, perspiration and chlorine in the laundries this type of color has become very popular, as the color in the fiber is good for the life of the material. Of course, the cost per yard to dye a fast color on piece goods is more than the cost to dye piece goods with colors that will not stand the rigid tests. For example, take cotton broadcloth, vat-dyed:

Fabric used, broadcloth, light blue, width, 36-37 inches, weight 4.8 yards per pound; count, 128 x 68; proportion dyed, 100 per cent. Cost of dye per shirt, 2.2 cents.

Basis: 3⅛ yards required for one shirt. One yard = 0.208 of a pound; 3⅛ × 0.208 = 0.65 of a pound per shirt.

Calculation of dye cost: 100 pounds of broadcloth, equal to 480 yards, require 1½ pounds of Indanthrene Blue GCD double paste at $2.25, equals $3.38 or 3.38 cents per pound, equal to 0.705 of a cent per yard. 3⅛ × 0.705 = 2.2 cents per shirt.

The same fabric dyed tan with vat dyes shows a cost of 1 cent per yard.

Fabric used, broadcloth, violet; width, 36 inches; weight, 5.4 yards per pound; proportion dyed, 100 per cent. Cost of dye per yard of fabric, 1.76 cents; cost of dye per pound of dye, Indanthrene Brilliant Violet RK paste, $1.60.

Calculation of dye cost in fabric: 100 pounds of fabric, equal to 537 yards, require 5.9 pounds of dye at $1.60, equals $9.44. $9.44 ÷ 537 = 1.76 cents.

The same fabric dyed Navy Blue shows a cost of 1.1 cents per yard, using 12 pounds of Sulphanthrene Blue GR paste at $0.50 per pound for 100 pounds of fabric.

### Shirting Materials and Dress Goods

At the present time a very large percentage of all the shirting materials that have colored patterns and stripes are vat-dyed yarns or raw stock. Some years ago—and during the World War—it was very difficult to obtain the vat colors for this class of fabric, and substitutions necessarily had to be made, sacrificing some of the fastness requirements. However, at the present time the supply of vat colors is more than sufficient to take care of the demands for all the necessary fast-colored fabrics.

*Printed Shirtings and Fabrics.*—For cotton shirting (goods 36 inches wide and running from about 4 to 5 yards to the pound), printed with vat dyes, which withstand the severe modern laundry treatment, the actual cost of dye per yard necessarily shows a wide spread. It varies according to (1) the printed pattern which may have a small figured effect, narrow or a heavy stripe, or a heavy pattern in heavy shades covering a large part of the fabric, and (2) the price of the dye or dyes consumed.

Data obtained from three print works for shirtings printed with vat dyes showed a dye cost (not including chemicals) ranging from 0.1 cent per yard to 1 cent per yard for 1924 and 1925. Special lines, however, showed a cost below and above these limits. Representative samples of important styles showed a cost of 0.3 to 0.4 cent per yard.

Fabric used, cotton shirting printed with vat dyes; width, 36 inches; weight, 4 yards to pound. Cost of dye per shirt, 1.25 cents.

Basis: 3⅛ yards required for one shirt; 3⅛ yards × 0.4 cent (average cost per yard of dyes) = 1.25, or 1.25 cents, cost of vat dyes per shirt.

Also for chrome colors the dye cost ranged from 0.1 to 0.5 cents per yard. For printed heavy shades on such fabrics as cretonnes and crepes the dye cost reaches 1.25 cents a yard; for cretonnes and heavy-weight fabrics printed with alizarin mordant dyes and vat dyes the cost amounted to several cents a yard, and for full patterns in heavy shades it exceeded 15 cents per yard in some instances.

Shortly before the introduction of vat colors there was very little sale for printed dress goods, as printed fabrics did not have the fastness of the woven material. The introduction of vat colors practically saved the printing trades in this class of work. Formerly, in discharge printing, the ground shades were obtained with the ordinary direct colors; the color discharge effects being obtained with basic colors. At the present time practically all the dress goods material for this class of work are produced by dyeing the ground shades with the fastest

*A paper delivered at the Annual Meeting of the Piedmont Section, Charlotte, N. C., October 15, 1927.

types of developed colors, and in some cases light shades of dischargeable vat colors. The discharge effect is produced with vat colors:

Pontamine Diazo Violet BL
Diazo Brown 2G
Blues BR—2RL
Diazo Red 7BL
Indigo Blue 4GL
Diazo Oranges
Diazo Yellows
Diazo Scarlets
Ciba and Cibanone and a few of Indanthrenes.

### Raw Cotton

In this class of dyeing, which is used very extensively in the South, the tendency to faster colors has been very marked. For instance, in the past two years the mills that have been doing this type of work have gradually been changing from ordinary direct colors (Cotton Black, Blue 2B and Benzo Purpurine) to a better class of faster to light direct colors (Yellow 4GL, Blue 4GL and Red 8BL), and in a number of cases the mills have changed almost entirely from the direct color class to the sulphur color type. In the hosiery trade quite a few mills are making ingrain color effects by knitting sulphur dyed yarns into the hosiery, then cross-dyeing the cotton and rayon, which produces very beautiful multi-colored effects. Some of the mills have also adopted vat colors for this particular class of work. In my opinion this change is taking place very gradually, and as the trade demands faster shades they will gradually adopt fast colors.

### Hosiery

There has been a decided change in the type of colors being used to-day in the hosiery trade over the colors that were used a few years ago. As you know, some five years ago twenty shades would cover all the line of hosiery colors such as Cordovans, Navy Blues, Russian Calf, Grays, etc., but at the present time I venture to say that there is not a single hosiery mill that does not have at least forty shades and in some cases as many as sixty shades. However, the shades at the present time are almost entirely light pastel shades, such as Nude, French Tan, Rose Taupe, etc. These shades are usually made with the fast-to-light direct colors because they have to be put into window displays and are subjected to quite a light test. These colors have to stand these tests or else fade badly, causing the hosiery to become worthless.

### Paper Dyeing

In this industry there has been a decided tendency to faster colors. For example, the bond papers. In the past few years the type colors used for bond shades are much faster than ten years ago. The blues used in producing white bond, such as Acid Blue R, Soluble Blue R, Basic Blue, etc., together with Rhodamine, Safranine (in exceptional cases) and also several of the cheaper acid reds, have been replaced at the present time with vat colors and other types under the trade names of Halopont, Helmerco and Solar Blues and Violets. These types of colors, when used in bond papers, are exceptionally fast to light and the white is considered reasonally permanent.

### Interesting Excerpts from the 1925 Census of Dyes

Vat dyes other than Indigo obtain their maximum production with a total of over 2,600,000 pounds or an increase of 43 per cent over the 1924 figure. The total production of vat dyes, including Indigo, was 31,730,178 pounds, as compared with 21,818,022 pounds in 1924.

The increasing consumption of vat dyes is largely due to their demand by certain progressive textile manufacturers of fast dyed fabrics. Although more costly than other colors, vat dyes are more economical in the long run, especially for cottons and fabrics subjected to the severe treatment of the modern laundry. Up to the present time these dyes have been used chiefly on cotton, but their application to silk is assuming more importance each year. The consumption of this group of colors in the United States has nearly doubled in the last three years.

As cotton goods dyed with these colors withstand the severe treatment of the modern laundry, the increased cost of dye per yard is a minor factor compared with the increased life of the fabric. A large majority of the women to-day in purchasing dress goods demand goods of guaranteed fastness.

A European colorist, referring to the vat dyes, has said that Europe is too poor to afford anything but fast dyes, as he considers the loose or fugitive colors an extravagance. Their superior fastness and the variety and beauty of shades which they yield have been largely responsible for a steady increase in their use.

In conclusion, I wish to say that I have several copies of the pamphlet, "Fast Dyes, Why, When, How," and will be glad to distribute them to any of you gentlemen wishing a copy.

## Practical Laboratory Methods *

By R. H. Southern
*Chemist and Colorist, Proximity Print Works*

It might be well to state at the outset that the primary object of this paper is not, as the title might suggest, to discuss in detail a varied assortment of laboratory pro-

*Paper presented before the Annual Meeting of the Piedmont Section, October 15, 1927.

cedures, but more to create an interest in and encourage the establishment of dyehouse laboratories in those plants which do not have them, as an aid to the dyer and other departmental heads in matching shades, testing materials, and otherwise raising the quality of their work to a higher plane.

Practically all the larger plants and the more progressive small ones maintain well equipped laboratories and employ chemists to co-ordinate the work of the purchasing and plant departments and to carry on research of a local nature. It is a generally accepted opinion that a laboratory and chemical staff of this type is a paying proposition. That the industrial chemist is an economic asset is universally recognized by all industries involving chemistry in their operation. The textile industry as a whole takes no exception to this view in recognizing the value of the textile chemist. However, it is only within recent years that this great industry with its multitude of complex chemical problems has given serious thought and attention to research problems in its plant laboratories. The manufacture of dyestuffs has progressed to a high degree of efficiency in technique and scientific control, whereas the application of dyestuffs still remains a craft with the average dyer. However, with the aid of science the dyer is gradually improving his "batting eye." As an instance of a step toward greater improvement, as suggested by others, why should it not be feasible by continued research in the science of color measurements to classify colors according to wave lengths, which are definite terms, rather than according to tones, such as reddish blue, etc., which are indefinite terms? And why should it not be possible to evolve simple methods of titrating dyestuffs for exact strength rather than depending on the eye for doubtful judgment of strength? The keynote to achievement is research, and the valuable work that is already being done by the A. A. T. C. C., while yet in its infancy, is probably the greatest prime factor in bringing this realization to the manufacturers. In this connection, it is interesting to note in a recent news item that a large Eastern plant was erecting a quarter of a million dollar laboratory for research and experimental purposes.

Contrary to this progressive view of the modern mill laboratory, however, there are many mills that, from the standpoint of economy, conscientiously feel they cannot afford to employ chemists. They feel that a laboratory is non-producing. But inasmuch as a practical control laboratory is an absolute necessity as a foundation for future research, and if we, as an association, are to promote the ideals of our organization, we must show the mill management that a laboratory is practical and actually an economic asset. A solution to the problem of the smaller mills is suggested, namely, in (1) installing and equipping a small working laboratory, and (2) educating the dyer, if not already a chemist, to the chemical point of view, so that he may do his own testing.

Many mill men who would be willing to invest a small sum in a practical working laboratory may feel that the dyer, not being college trained in chemistry, would not know how to use the apparatus. If a dyer is capable of using dyestuffs intelligently on a large scale, he should be capable of testing those dyestuffs on a small scale, by the same intelligent use of the laboratory apparatus as of the machinery in the plant, and should be encouraged and aided in doing this by the management.

## The "Lab" and Its Equipment

In order to start a small laboratory for the dyehouse, just what is necessary in apparatus and equipment? A general list is given below, to be modified as desired, as suggestive of the most essential and least expensive apparatus and equipment necessary for practical and speedy methods of testing the more common textile materials and dyestuffs.

### *Laboratory Equipment and Apparatus*

| | |
|---|---|
| One desk, with drawers and cupboard, 12′ x 3′ x 3′ (may be built by mill carpenter) | |
| One table, 4′ x 2½′ x 2½′, for balances (may be built by mill carpenter) | |
| One sink, hot and cold water | $6.00 |
| One clothes wringer | 6.00 |
| One electric stove (two heating units) 9″ x 18″ | 5.00 |
| One set balances, Schaar double beam trip scale | 13.50 |
| Four casseroles, 210 c.c. | 3.36 |
| Two casseroles, 750 c.c. | 3.36 |
| One-half dozen porcelain dye pots | 12.60 |
| One-half dozen glass stirring rods, 8″ x 3/16″ | .25 |
| One-half dozen enamel dippers, 3-pint size | 1.20 |
| One graduated cylinder, 500 c.c. | 1.10 |
| Two graduated cylinders, 50 c.c. | .96 |
| One funnel, 4″ diameter | .40 |
| One funnel, separatory 500 c.c. graduated | 4.00 |
| 100 test tubes with lip, 150 x 18 mm. | 2.30 |
| Two flasks, Florence, Pyrex, flat bottom, 500 c.c. | .60 |
| Two flasks, Erlenmeyer, Pyrex, 250 c.c. | .44 |
| One flask, volumetric, 500 c.c. | .70 |
| One pipette, graduated, 10 c.c. Mohrs | .55 |
| One pipette, volumetric, 5 c.c. | .18 |
| One pipette, volumetric, 1 c.c. | .18 |
| Two buretes, 50 c.c. | 4.30 |
| One burette support | 1.20 |
| One thermometer, deg. Fahr. | .80 |
| One package filter paper, 15 cm., Whatman No. 1. | .46 |
| Total cost apparatus | $70.94 |

Reagents, such as iodine and iodide for starch tests, the prussiates of potash for iron, silver nitrate for chlorides, barium chloride for sulphates and indicators, etc., should be purchased as needed, in 4-ounce to 1-pound quantities.

*Literature*

A Manual of Dyeing, two volumes, Knecht, Rawson & Lowenthal.

The Application of Dyestuffs, J. Merritt Mathews.

Yearbook of the American Association of Textile Chemists and Colorists (through membership in the A. A. T. C. C).

American Dyestuff Reporter (through membership in the A. A. T. C. C.

The Textile World.

Current literature and handbooks of the various dyestuff companies.

This layout of apparatus and equipment should not cost more than one hundred dollars. As an investment, however, the management should not expect immediate returns in dollars and cents. The greatest return should result from the increased efficiency of the dyer, or chemist, who, in turn, by careful training through diligent study of the literature at his disposal, should produce results of an economic value.

## Checking and Testing

In making a practical test of materials it is sometimes suitable for comparative purposes to check one sample against the other, reproducing as nearly as possible plant operations; that is, using all materials in the laboratory quantities in the same manner in which they function in actual use. For instance, if it is desired to test two different samples of cotton softeners, two laboratory quantities of the size are made up, each batch containing one of the softeners to be tested, and all other materials being present in the same proportion as in the kettle. Each batch is cooked alike, reproducing as nearly as possible kettle conditions as to time, temperature, etc. Small pieces of yarn or cloth are then treated with the mixtures for comparison.

The above example is merely given to show that there is no mystery to testing materials on a practical basis. Anyone with average intelligence may be trained to do the work. Such a laboratory as outlined may be used for obtaining a vast amount of information pertaining to chemical control.

The process of bleaching may be controlled definitely by the use of simple methods of titrating the chemic and acid. An excess of chemic left in the cloth is indicated by the blue coloration on spotting with a few drops of a mixture of 20 c c. of 5 per cent starch paste and 80 c.c. of 10 per cent potassium iodide solution. An excess of acid is indicated by the distinct red coloration produced by spotting with a few drops of .1 per cent Methyl Orange solution. Iron stains are indicated by the blue coloration produced on spotting with a solution containing 10 per cent potassium ferrocyanide and 20 per cent hydrochloric acid (conc.).

The work of the dyehouse is greatly improved through the use of a laboratory. More uniform shades, at a lower cost, should result from regular testing of the dyes, both as to shade and as to money value. No fast rule for practical testing is recommended for any particular group of dyestuff. Local conditions and the properties of the individual members are factors to be considered. A typical method for testing sulphur colors is given below:

Weigh out 5 gms. dye, 7 gms. sodium sulphide (fused), or better, the same proportion as used in the plant, and 2 gms. of soda ash; place in 250 c.c. beaker, add 75 c.c. water, bring to boil with constant stirring to dissolve, then make up with water to 100 c.c. volume. For 5 per cent shade on 10 gms. swatch of dry bleach cloth on 10 gms. skein or sample of cotton previously boiled and wet out with Turkey Red oil, transfer 10 c.c. of the above solution to a 600 c.c. dye pot, and raise the volume to 400 c.c. with hot water. Enter swatch or skein of cotton at 170 deg. Fahr., dye 15 minutes, raising temperature to 190 deg. Fahr., add 25 c.c. of 20 per cent salt solution, dye 15 minutes longer, raising temperature to boiling, lift material from dye pot, let drain two minutes, immerse in cold water, rinse in cold water, squeeze and dry a one-half portion.

The other half is aftertreated, if desired, with clean liquor from the plant machine and dried. Other tests may be made, such as fastness to light, washing, etc. The various samples are compared and the results recorded for future reference. It is well to remember that all dyeings should be comparative and performed at the same time under the same conditions. Those interested in the application of sulphur colors are referred to the article by H. M. Chase on "The Application of Sulphur Colors to Raw Cotton," American Dyestuff Reporter, May 16, 1927.

## Testing Softeners and Oils

In finishing, softeners and oils are the more frequent variables. Turkey Red oil is quickly evaluated as to total fatty matter content by the following method: Fifty gms. of the oil are transferred to a 250 c.c. beaker; 100 c.c. of water and 30 c.c. of conc. sulphuric acid are added, and the mixture heated until the oily layer which forms is perfectly clear. The mixture is then cooled somewhat and transferred to a separating funnel. The

acid water is run back into the same beaker to wash down any adhering drops of oily matter, and again transferred to the separatory funnel and separated as before. The oily layer is run into a graduated cylinder, and after cooling the volume is read off. The measured volume multiplied by .945 (the average specific gravity of the fatty acids) gives the weight of the total fatty matter.

$$\frac{\text{c.c. fatty matter} \times .945}{50} \times 100 = \% \text{ total fatty matter.}$$

The testing of dyestuff and chemicals, the identification of dyestuffs on the fiber, the determination of the nature of the sizing in a finished piece of goods, the development of new formulas and new ideas, and other problems, may be worked out from methods found in technical literature, and adapted so as to make them practical for local conditions. It is not possible to make elaborate analysis of all material in a laboratory of this kind, but insofar as possible all dyestuffs, oils and chemicals should be tested against standard samples which have been taken from initial deliveries. Chemical supplies should be bought on specification and paid for on analysis. The dyestuff manufacturers as a rule try to send out uniform products, but mistakes sometimes occur which may prove costly to the mill, if not checked before the materials are used. In the case of an off lot, however, the mills should take a sympathetic, rather than an antagonistic, point of view. By thus co-operating with the manufacturer and meeting him on the grounds of mutual understanding, each will benefit in the improved product the manufacturer is sure to produce when he knows exactly what the mill wants.

There is one other point I would like to stress. New shades as a general rule should be worked out in the mill laboratory. Although the dyestuff companies will render this service free of charge, it must cost them something and eventually it is the mill man who pays. So why not apply this expense on a laboratory at home?


# LAST CALL!

**Just a short time left for last-minute reservations for the**

# Seventh Annual Meeting

**of the**

## A. A. T. C. C.

## Hotel Pennsylvania, New York City

## December 2nd and 3rd

Technical Session,
Saturday Morning and Afternoon.
Annual Banquet Saturday Evening.

Informal Smoker and
Open Forum
Friday evening.

### *NOTICE*

The number of dinner reservations returned to date indicate that the Seventh Annual Dinner will be the largest ever held. The Committee urges all to send in their reservations *as soon as possible,* for late-comers may have great difficulty securing them.

**Remember—these meetings come but once a year. Do not miss this one!**

AMERICAN
DYESTUFF REPORTER

Devoted to the use and application of dyestuffs and the mechanical equipment incidental thereto.

LOUIS A. OLNEY
PROFESSOR OF CHEMISTRY AND DYEING, LOWELL TEXTILE SCHOOL
Directing Editor

CLAYTON HOAGLAND
Managing Editor

MYRON DREW REESER
Advertising Manager

Published biweekly by
HOWES PUBLISHING CO., INC.
90 William Street, New York City

A. P. HOWES, *President* E. S. PREDMORE, *Secretary*

Subscription price $5.00 per year; Canadian $5.50; foreign $6.00

Vol. XVI November 28, 1927 No. 20

## THE ANNUAL MEETING OF THE A. A. T. C. C.

THE need for technical research has been proclaimed so constantly during the past few years that it is at last definitely established as a cause. It has, moreover, assumed the character of a cause of major importance to the future economic development of textile manufacturing in the United States. From this time forward we should see this cause steadily gathering adherents and growing stronger as its message penetrates more deeply the indifference and inertia which squats so smugly upon a large part of the textile industry.

Some will argue that a lively interest in textile research is confined to a comparatively few earnest disciples and will remain so confined for many years to come. On the other hand, there are those who brazenly assert that the textile industry is spending enough on research right now and needs no cause waged in its name! But those who have been nearest to the heart of this movement, those who have coolly studied the need for research from every angle, know better. They know their cause will grow stronger, they believe it ought to grow stronger, and that soon. They speak with authority because they are the technical men of the textile industry, and in their position can feel the pulse of the movement for research.

This week one of the most active groups of workers in the cause of textile research—the American Association of Textile Chemists and Colorists—will meet in New York City for its seventh annual convention. Since its organization in 1921 this association has never been idle. With its main lines of study pursued under the able supervision of several committees, it has been able to lay the groundwork for future research of some magnitude. While the function of its local sections in New England, New York, Philadelphia and the South has obviously been the interchange of technical knowledge among its members, the primary aim of the association has been the encouragement of systematic research in textile chemistry and dyeing. Recently it appointed a research associate to work at the Bureau of Standards.

One of the major projects of the association, as many of our readers know, has been the standardization of fastness of both dyestuffs and dyed fabrics. The latest report of its Sub-committee on Light Fastness presents the results of numerous tests carried on in different sections of the country. When complete this study of fastness will form the most important collection of data on the subject that has so far appeared.

As its research program is more fully developed, the A. A. T. C. C. will most likely co-operate closely with British societies engaged in similar studies. The British Research Association for the Woolen and Worsted Industries, for instance, has established a color laboratory at Leeds to assist its members and is working with the Society of Dyers and Colourists, which has also done considerable research on dye fastness. The A. A. T. C. C. will thus assume the role of American participant in all international efforts to evolve a workable system of fastness standards.

One of the most discouraging impediments to technical research in textiles has been the lack of general support from the industry. But this passivity has not been all. As Edwin Slosson once pointed out, the resistance of the reactionaries to new ideas is not merely a passive resistance. For every cause there is set up an *active* opposition. And, we might add, it reveals itself in some surprising quarters. Cast an eye over these erudite words from a recent editorial in a textile journal:

> The New England textile industry—and its research efforts—invented the cotton gin, the sewing machine, the factory system, the Corliss engine, improved turbine water wheel, electric transmission, fast dyes—and by and through or for industrial research developed the modern automobile tire, rayon, most of the present drugs and pharmaceuticals and other by-products of textile or dyestuff producers.

from which is drawn the amazing inference that:

> Textiles are not deficient in research efforts. The thing that seems new to others is actually old to us.

From this it is evident that there are those who, to no apparent purpose, seek to spread the notion that the American textile industry can afford to be indifferent to modern research projects—for no sounder reason than because that which "seems new to others is actually old to us." But can research ever properly be termed "old"? Will there ever come a day in any industry when it can rest complacently on its laurels, content in the thought that it may ride forward on the wave of its past achievements, ever-prosperous and unplagued by such problems as vex those to whom research is "new"?

This smug pride in past achievements is the characteristic attitude of those who actively oppose the cause. What ulterior reason they may have for taking this stand we do not know. It is the attitude of those who see

textile science as a perfectly rounded whole, a finished temple. They are willfully blind to the fact that what may seem to be a finished structure is actually balanced on a few stones, though it may boast of a super-structure of advance knowledge, which the industry as it progresses is always building higher and higher.

It is on the unfinished foundation of its science, first of all, that the textile industry must concentrate its major research efforts, lest the structure above become top-heavy and dangerously unsound. This foundation must be finished and solidly cemented by fundamental technical research. It will never be completed without fundamental research. And this research must be carried on by the industry as a whole, as represented in its leading technical associations, and supported by the industry co-operatively. If the industry does not undertake the work it cannot hope that its structure will ever rest on a solid foundation of scientific principles and knowledge. That is the reason textile research has necessarily become a cause of *major* importance to the economic development of the American industry. Which, in turn, is the reason that the cause has been proclaimed so constantly as an urgent one.

Meanwhile everything that can be done to augment the general body of textile science is being done by technical groups like the A. A. T. C. C. Eventually the passive, indifferent sectors of the industry will be sufficiently stirred, by the accomplishments of the active research workers, to come out and vigorously champion the cause. When that day dawns it will be a most auspicious one for the American textile industry.

## AN UNPOPULAR IDEA

"NEW shades, as a general rule, should be worked out in the mill laboratory. Although the dyestuff companies will render this service free of charge it must cost them something and eventually it is the mill man who pays. So why not apply the expense on a laboratory at home?"

The above is quoted from a paper delivered by R. H. Southern before the Piedmont Section of the A. A. T. C. C., and published in the Proceedings in this issue.

The author addressed his paper chiefly to mill men who were not yet convinced that a laboratory was a necessary department of the mill. He explained the functions of the "lab" in relation to the processing departments and finally, coming to the topic of matching new shades, he voiced the opinion quoted above.

His advice may not have a pleasant ring to those dyers and chemists whose practice it is to depend entirely on dyestuff firms for their formulas. But those few energetic laboratory workers who delight in breaking up the drab routine of checking supplies by exercising their initiative in the matter of shade-matching will heartily agree with Mr. Southern when he says that "new shades should be worked out in the mill."

Close co-operation with dyestuff manufacturers is, from the mill's viewpoint, not only always desirable, but very often necessary. However, a certain degree of independence has its advantages and every mill chemist who regularly works out his own shades with formulas based on his own special materials, learns that this system offers certain economies that fully justify its practice.

## WHOM TO "SELL" ON RAYON

IS the public entirely sold on rayon? Some prominent rayon manufacturers do not think so and three of them—the Viscose Company, Du Pont and the Industrial Fiber Company—now propose to carry on co-operatively a national advertising campaign costing $500,000 annually. Its purpose will be primarily to eliminate any mistaken conceptions and prejudices that may exist in the public's mind regarding rayon.

A recent editorial in an organ of the rayon industry opposed this idea of advertising rayon to the public on the ground that the synthetic fiber is now widely known and accepted by consumers in increasing quantities. This organ of the trade contended that manufacturers would be spending their money to better advantage by striving to improve their product rather than advertise it nationally.

There is another angle to this question, an angle which readers of the REPORTER are more able to appreciate than even the rayon manufacturers. That is that among mill dyers and finishers considerable dissatisfaction exists over a buying practice that causes numerous troubles in processing rayon. *Too many mills have not yet learned how to buy rayon.* They leave the selection of a brand to the purchasing department, which knows little or nothing about the technology of the synthetic fiber—and therefore nothing about the dyeing properties of the many brands offered them. How one type or another may act in the dye bath, woven with cotton or wool, is a question that is too often overlooked by those who purchase rayon. The mill laboratory is, in too many cases, never consulted regarding the kind of rayon needed by the mill. In too many mills no laboratory tests are made before a lot of rayon is ordered. Trouble in the dyehouse is, far too frequently, the costly consequence of this negligent buying.

Rayon manufacturers can add immeasurably to the prestige of their product if they will direct some of their advertising to the textile mills, and if in this advertising they stress the great need for more scientific selection of rayon by means of laboratory tests, in which the dyeing properties are unmistakably determined before orders are placed.

Treasury Department has dismissed a petition of American producers for an anti-dumping order against German and Italian rayon yarn importers. Assistant-Secretary Bowman announced that investigation showed such an order unnecessary since there are no surplus stocks of such yarn in this country and the difference between the domestic and foreign prices is insignificant.

## CHEMISTRY AND INDUSTRY

A PARIS news dispatch states that in all probability a Franco-German chemical agreement will be signed within a few days anticipating the formation of the proposed international chemical combine which embraces British and Belgian interests. The Franco-German accord, it is added, is already being put into effect for dyestuffs and chemicals for artificial silk.

If any form of combination can be considered more "ultimate" than one which attempts control of basic raw materials, it is probably to be found in the chemical field. Modern industry has become helplessly dependent upon access to certain chemical products. It would be difficult to name any considerable number of manufacturing lines that would not be seriously affected by restricting their access to the markets for chemical products.

Fortunately the countries that supply the materials essential to the manufacture of required chemicals are themselves more or less dependent upon one another. But that fact would not necessarily prevent an international chemical trust on a great scale from bringing pressure to bear upon an endless chain of industries ranging from necessities to luxuries of the most varied description. It is a situation to be carefully studied by the United States with a view to evolving suitable means of self-defense.—Journal of Commerce.

## WHY NOT EXPORT CHEMICAL BY-PRODUCTS?

Chemical manufacturers of the United States have been greatly aided by the Chemical Division of the Department of Commerce, which has frequently assisted them in marketing their primary products. The division announces that its services are also available to accredited firms in locating foreign outlets for *by-products* which cannot be easily disposed of in domestic markets because of limited uses. It is suggested that any firms interested should submit a list of the chemical recovered in the processes of manufacturing their staple products, with an analysis or description, uses evolved, if any, and approximate tonnage available. Correspondence should be addressed to the Industrial Chemical Section.

## "NAME THE PELT" IMPROVES FUR ADVERTISING

Unfair practice in advertising and selling furs is steadily giving ground before the "Name the Pelt" campaign instituted and carried on by the National Better Business Bureau.

The Bureau recently made a survey of fur advertising in the newspapers of thirty-seven bureau cities and twelve non-bureau cities. This survey, conducted to determine whether or not merchants throughout the country were co-operating with the Bureau in correctly naming their furs, disclosed that there was a much smaller percentage of inaccuracies in cities where local business bureaus had waged their campaign.

The bureau was gratified to find that the increasing accuracy found to-day in fur advertising can be traced to the willingness of fur dyers to approve the fundamental advertising standard of "Name the Pelts."

## CHEMICAL EXECUTIVES MAY MEET

How to strengthen the foreign reporting service on chemicals will be discussed if and when executives of the chemical industry meet in Washington with Secretary of Commerce Hoover's Chemical Advisory Committee. It is just possible another meeting of the chemical executives will be held this year, and therefore plans for the program have been tentatively worked out by the Advisory Committee.

Another topic that will most likely be discussed if the meeting is finally arranged will be the proposal to assign chemical trade commissioners to Latin America, the Far East and the Near East.

Nor will chemical marketing research be overlooked at this meeting, for it is proposed to discuss the application of the fellowship idea to the chemical division of the Department of Commerce. It has been suggested that a number of the chemical industries would profit by maintaining a fellowship in this division. This plan would make it possible for the division to develop studies along several specialized lines.

## AMONG THE NEW TECHNICAL BOOKS

Described as an authoritative survey of dyeing that is quite different from other books on the same subject, "The Dyeing of Textile Fibers," by R. S. Horsfall and L. G. Lawrie, is being prominently featured on all lists of current technical books. This work treats the subject from the angle of the fiber to be dyed instead of from the dye or its group class.

"Cassien, Its Preparation, Chemistry and Uses," is another volume recently published which some textile chemists may find instructive. "The Use of Solvents in Synthetic Organic Chemistry," by Donald W. MacArdle, will interest every research chemist working with solvents. It covers the subject of solvents completely.

"The Grammar of Textile Design," by H. Nisbet, giving the fundamentals of structural design for woven fabrics, has been published in a new third edition, revised and enlarged.

Textile chemists and colorists who would like to pursue courses of study in general organic chemistry will find several new books on the fall lists that should be of inestimable value in simplifying the work of self-education. Among these might be mentioned the following:

"Catalysis in Organic Chemistry," by Paul Sabatier and E. Emmet Reid.

"Introduction to Organic Research, a Manual for Stu-

dents and Manufacturers," by Allen Rogers (a thoroughly revised edition).

"Standard Methods of Chemical Analysis," by Wilfred W. Scott, Sc.D. (two volumes).

Information concerning these and other recently published technical books on dyeing, bleaching, finishing and general organic chemistry may be obtained by writing the Book Department of the REPORTER.

## HUNTERS IN THE DARK

By A. SCHAEFFER, JR.

One of the least known efforts of the National Tuberculosis Association is the systematic research carried on under its supervision. To the man in the street the tubercle bacillus may be only "a bug in the lungs," but to the highly trained specialists who are making tuberculosis research their life work, it is one of the most baffling problems of medicine.

Since the discovery of the tubercle bacillus by Koch, forty-five years ago, research workers had gone ahead independently, each blazing his own trail. A number of years ago, however, a plan of co-operative research was begun by the National Tuberculosis Association for new and more exact knowledge, on the basis of certain physical structures which compose the tubercle in the animal body. These structures are the tubercle bacillus, the epithelioid cell, the lymphocytes, certain colloid substances and the flowing blood and lymph compounds which come in contact with the tubercle structure.

The chemical procedure for analyzing the bacillus is performed in nineteen different steps so far. At the last annual meeting of the National Tuberculosis Association in Indianapolis in May, the Research Committee exhibited fifteen vials and bottles containing waxes, fats, sugars and proteins which already have been isolated in the laboratory as distinct substances, many of them new to scientific knowledge. This is a decided step forward toward the solution of the problem. The substances range from a dirty, black treacle-looking mass to white, shiny crystals, and were separated by specialists in the field of chemistry, physics, biology and physiology.

What they will discover in the future cannot be predicted, for they are as gropers in the dark, seeking the pathway to the light of knowledge. Eventually the various bits of information will be gathered together, and on the basis of the whole there is little question but that a cure for tuberculosis will be discovered—the result of team-work.

### CHEMISTS AID IN RESEARCH

That others besides specialists in research are keenly interested in the problem is best illustrated by the fact that two large chemical manufacturers are greatly assisting the research work by providing millions of tubercle bacilli bred on a carefully composed chemical medium. Last year, as only part of their contribution to this organized effort to discover a cure, one house had 2,000 bottles of tubercle bacilli growing at one time. The product of these cultures gave a mass of moist bacilli about as large as an American cheese, yet it served only to begin the study of the fat substances in this organism.

Until a specific cure or medical aid is discovered for the eradication of tuberculosis, the National Tuberculosis Association reports that the only treatment that has so far been found to be effective is the combination of absolute rest, good food, sunshine and fresh air under the direction of a physician who understands tuberculosis.

Any information which the National Tuberculosis Association or its 1,500 affiliated State and local organizations possess in regard to tuberculosis is available to anyone on request. Their entire work is supported by the annual sale of Christmas seals.

## DYES IMPORTED DURING OCTOBER

(*Continued from page 734*)

| Name of Dye and Manufacturer | Quantity (pounds) |
|---|---|
| Milling Orange G—(IG) | 500 |
| Neolan Blue GG—(I) | 551 |
| Neolan Green LBN Conc.—(I) | 551 |
| Novazol Blue B—(G) | 1,102 |
| Pilatus Fast Green BL Conc.—(IG) | 300 |
| Poseidon Blue BA Conc.—(IG) | 150 |
| Pure Wool Blue J Extra—(DH) | 110 |
| Silk Yellow R—(IG) | 300 |
| Sulphon Orange G—(IG) | 1,000 |
| Supramine Black BR—(IG) | 250 |
| Supramine Blue FB, R—(IG) | 600 |
| Supramine Brown G—(IG) | 300 |
| Supramine Red B, 2G—(IG) | 400 |
| Supramine Yellow G, R—(IG) | 300 |
| Wool Blue 5B (free from salt)—(IG) | 600 |
| Wool Fast Orange G—(IG) | 200 |
| Wool Fast Yellow G—(By) | 240 |

### Vat Dyes

| | |
|---|---|
| Algol Blue 3RP Powder (s. s.)—(By) | 388 |
| Alizarine Indigo 5R Paste—(IG) | 1,500 |
| Anthra Orange RH Paste Fine—(IG) | 1,300 |
| Anthra Pink B Extra Paste, Extra Paste Fine—(IG) | 4,000 |
| Anthra Pink R Extra Paste Fine—(IG) | 1,000 |
| Anthra Scarlet B Paste—(IG) | 500 |
| Ciba Brown G Paste—(I) | 1,212 |
| Cibanone Orange 6R—(I) | 1,375 |
| Eridan Brilliant Scarlet B Paste—(IG) | 1,278 |
| Grelanone Red 2B Paste—(IG) | |
| Grelanone Red 2B Powder (s. s.)—(IG) | 650 |
| Helindone Fast Scarlet G Paste—(IG) | 1,000 |
| Helindone Printing Black RD Paste—(IG) | 7,500 |
| Hydron Brown G Paste—(IG) | |
| Hydron Brown R Paste—(IG) | |
| Hydron Brown R Paste—(C) | 3,391 |
| Hydron Green G Paste—(IG) | 200 |
| Hydron Olive GN Paste—(IG) | 500 |
| Hydron Pink FF Powder (s. s.)—(IG) | 300 |
| Hydron Scarlet 3B Paste—(C) | 441 |
| Hydron Violet BF Paste High Conc.—(IG) | 100 |
| Indigosol AZG—(DH) | 110 |
| Indigosol O4B—(IG) | 200 |
| Indigosol Black IB—(DH) | 55 |
| Indigosol Orange HR—(IG) | 110 |

| Name of Dye and Manufacturer | Quantity (pounds) |
|---|---|
| Indigosol Scarlet HB—(DH) | 110 |
| Indigosol Violet AZB—(DH) | 110 |
| Indigosol Yellow HCG—(DH) | 55 |
| Vat Blue RZ Dbl. Paste (s. s.)—(IG) | 3,400 |
| Vat Blue Green B Dbl. Paste Fine (s. s.)—(IG) | 3,060 |
| Vat Brilliant Blue 3G Paste Fine—(IG) | 200 |
| Vat Brilliant Orange RK Paste Fine—(IG) | 1,000 |
| Vat Brown 2G Paste—(B) | |
| Vat Brown 2G Paste—(IG) | |
| Vat Brown 2G Powder (s. s.)—(IG) | 2,050 |
| Vat Brown WM Powder—(IG) | 100 |
| Vat Golden Orange 3G Paste—(IG) | 794 |
| Vat Golden Yellow GK Dbl. Paste Fine (s. s.)—(IG) | 22,000 |
| Vat Gray 3B Dbl. Paste (s. s.)—(IG) | 1,000 |
| Vat Green 2G Dbl. Paste Fine (s. s.)—(IG) | |
| Vat Green 2G Dbl. Paste (s. s.)—(IG) | |
| Vat Green 2 Powder s. s.)—(IG) | 5,368 |
| Vat Orange 4R Powder (s. s.)—(IG) | 500 |
| Vat Pink B Powder (s. s.)—(IG) | 750 |
| Vat Printing Brown R Paste—(IG) | |
| Vat Printing Brown R Paste—(By) | 2,829 |
| Vat Red GG Paste—(IG) | 935 |
| Vat Red Brown R Paste Fine—(IG) | 972 |
| Vat Red Brown 5RF Paste Fine—(IG) | |
| Vat Red Brown 5RF Powder (s. s.)—(IG) | 1,000 |
| Vat Yellow RK Powder (s. s.)—(IG) | 250 |

## Mordant and Chrome Dyes

| | |
|---|---|
| Acid Alizarine Gray G—(IG) | 950 |
| Acid Anthracene Brown PG—(By) | 936 |
| Acid Anthracene Red 5BL—(IG) | 200 |
| Acid Chrome Blue 2R—(IG) | 20 |
| Acid Chrome Red B—(IG) | 150 |
| Alizarine Light Gray BS Conc.—(S) | 1,000 |
| Anthracene Chromate Brown EB—(IG) | 500 |
| Brilliant Chrome Violet 3RA—(DH) | 441 |
| Chrome Printing Orange 2R Powder—(I) | 110 |
| Chromochlorine G—(DH) | 110 |
| Chromocitronine 3R, V—(DH) | 550 |
| Chromovesnvine RA—(DH) | 110 |
| Chromoxane Pure Blue BLD Powder—(IG) | 100 |
| Erio Anthracene Brown R—(G) | 220 |
| Eriochrome Brilliant Violet B Supra—(G) | 551 |
| Eriochrome Brown SWN Supra—(G) | 220 |
| Metachrome Blue Black 2BX—(IG) | 1,600 |
| Metachrome Brilliant Blue 2RL—(IG) | 50 |
| Metachrome Olive 2G—(IG) | 1,000 |
| Metachrome Red G—(IG) | 300 |
| Modern Black N—(DH) | 330 |
| Modern Brown—(DH) | 22 |

## Direct Dyes

| | |
|---|---|
| Benzo Chrome Brown B—(IG) | 200 |
| Benzo Fast Bordeaux 6BL—(IG) | 300 |
| Benzo Fast Black L—(IG) | 500 |
| Benzo Fast Brown GL—(IG) | |
| Benzo Fast Brown 3GL—(IG) | |
| Benzo Fast Brown RL—(IG) | 2,550 |
| Benzo Fast Eosine BL—(IG) | 50 |
| Benzo Fast Gray BL—(IG) | 300 |
| Benzo Fast Heliotrope 4BL—(IG) | 518 |
| Benzo Fast Orange P, 2RL—(IG) | 700 |
| Benzo Fast Violet BL—(By) | 560 |
| Benzo Fast Yellow RL—(IG) | 1,000 |
| Benzo Rhoduline Red 3B—(IG) | 650 |
| Brilliant Benzo Green B—(IG) | 570 |
| Brilliant Direct Green B—(By) | |
| Brilliant Benzo Violet 2R—(By) | 804 |
| Brilliant Sky Blue 8G Extra—(IG) | |
| Brilliant Sky Blue 8G Extra—(By) | 1,490 |
| Brilliant Sky Blue 2RM—(IG) | 150 |
| Chloramine Light Gray B Conc.—(S) | 584 |
| Chlorantine Fast Brown 3RL—(I) | 992 |
| Chlorantine Fast Yellow 5GL—(I) | 110 |
| Chlorazol Fast Brown RK—(BDC) | 1,000 |
| Chlorazol Fast Eosine B—(BDC) | 120 |
| Columbia Catechine G—(IG) | 500 |
| Cotonerol A Extra—(IG) | 300 |
| Diamine Azo Green 3G—(C) | 593 |
| Diamine Catechine G—(IG) | 300 |
| Diamine Fast Brown GBB—(IG) | 1,000 |
| Diamine Fast Orange EG—(IG) | 1,000 |
| Diamine Fast Orange ER—(IG) | 1,550 |
| Diaminogene GG—(C) | 441 |
| Diazo Brilliant Green 3G—(IG) | 300 |
| Diazo Brilliant Scarlet 2BL Ex. Conc.—(By) | 678 |
| Diazo Brilliant Scarlet 6B Extra—(IG) | 599 |
| Diazo Brilliant Scarlet G Extra—(By) | 200 |
| Diazo Brilliant Scarlet S8B—(IG) | 100 |
| Diazo Brown BW—(I) | 220 |
| Diazo Brown G—(By) | 200 |
| Diazo Brown 6G—(By) | |
| Diazo Brown 6G—(IG) | 950 |
| Diazo Brown 3R—(IG) | 500 |
| Diazo Fast Red 7BL—(IG) | 850 |
| Diazo Fast Violet BL—(IG) | 450 |
| Diazo Green 3G—(IG) | 75 |
| Diazo Indigo Blue 2RL—(IG) | 500 |
| Diazo Rubine B—(IG) | 500 |
| Diazo Sky Blue B—(IG) | |
| Diazo Sky Blue B—(By) | 851 |
| Diazo Sky Blue 3GL—(By) | |
| Diazo Sky Blue 3GL—(IG) | 760 |
| Diazol Light Red N8B—(CN) | 771 |
| Diphenyl Brown BBNC—(G) | 2,205 |
| Diphenyl Fast Bordeaux BC—(G) | 110 |
| Diphenyl Brown Bronze B—(G) | 1,102 |
| Direct Catechine 3G—(I) | 110 |
| Direct Safranine RW—(I) | 441 |
| Fast Cotton Corinth —(IG) | 100 |
| Fast Cotton Gray VL—(IG) | 500 |
| Fast Cotton Violet 4R—(IG) | 100 |
| Half-Wool Blue 3R—(IG) | 500 |
| Minaxo Black BBNX—(IG) | 400 |
| Minaxo Fast Pink BX—(IG) | 100 |
| Paper Red A Extra—(IG) | 400 |
| Pluto Brown 2G—(IG) | 300 |
| Rosanthrene Brilliant Red BR—(I) | 110 |
| Triazol Light Orange 2RL—(GrE) | 79 |

## Direct Dyes for Artificial Silk

| | |
|---|---|
| Cellit Brown G—(IG) | 50 |
| Celliton Blue Extra Paste—(IG) | 200 |
| Celliton Fast Red Violet R Paste—(IG) | 180 |
| Celliton Fast Violet B Paste—(IG) | 200 |
| Celliton Fast Yellow R Paste, 2R Paste—(IG) | 200 |
| Celliton Red R Paste—(IG) | 300 |
| Cibacete Navy Blue 3R Paste—(I) | 331 |
| Cibacete Orange 3G Paste—(IG) | 606 |
| Cibacete Orange 2R Paste—(IG) | 440 |
| Cibacete Scarlet G Paste—(IG) | 220 |
| Cibacete Yellow 3G Paste—(IG) | 661 |
| Duranol Blue G Paste—(BDC) | 54 |

| Name of Dye and Manufacturer | (pounds) Quantity |
|---|---|
| Duranol Red 2B Paste—(BDC) | 120 |
| Duranol Red G Paste—(BDC) | 590 |
| Ionamine A—(BDC) | 200 |
| Setacyl Direct Blue G Powder—(G) | 1,102 |
| Setacyl Direct Orange 2R Powder—(G) | 276 |
| Setacyl Direct Red B Powder—(G) | 276 |

### Rapid Fast Dyes

| | |
|---|---|
| Rapid Fast Orange RH—(IG) | 2,850 |
| Rapid Fast Red B Paste—(By) | |
| Rapid Fast Red B Paste—(GrE) | 325 |
| Rapid Fast Red LB Paste—(IG) | 500 |
| Rapid Fast Red GZ Paste—(IG) | 2,000 |

### Basic Dyes

| | |
|---|---|
| Acridine Flavine RD—(DH) | 220 |
| Brilliant Acridine Orange R Conc.—(Roh) | 331 |
| Brilliant Acridine Orange 5R—(DH) | 110 |
| Japan Black MBG—(IG) | 200 |
| Rhodamine 6GH Extra (s. s.)—(S) | 1,650 |
| Rhoduline Blue 5B—(IG) | 45 |
| Rhoduline Scarlet G—(IG) | 1,000 |

### Sulphur Dyes

| | |
|---|---|
| Immedial Yellow Olive 5G—(IG) | 100 |
| Indocarbon CL Conc.—(IG) | 2,000 |
| Katigene Indigo CLGG Extra—(IG) | 500 |
| Sulphide New Blue BL—(IG) | 96 |
| Thional Brilliant Blue 6BS Conc.—(S) | 265 |

### Spirit-Soluble and Color-Lake Dyes

| | |
|---|---|
| Alizarine Astrol Powder (oil soluble)—(IG) | 200 |
| Alizarine Cyanine Green Ex. Pdr. (oil soluble)—(IG) | 100 |
| Ceres Blue I—(IG) | 50 |
| Hansa Yellow G Powder—(IG) | 300 |
| Hansa Yellow GSA Powder—(IG) | 1,500 |
| Helio Bordeaux BL Paste—(IG) | |
| Helio Bordeaux BL Powder (s. s.)—(IG) | 12,474 |
| Helio Fast Pink RL Paste—(IG) | 400 |
| Helio Fast Yellow H10G—(By) | 700 |
| Helio Marine 2GL Paste—(By) | 100 |
| Helio Red RMT Extra Powder—(IG) | 500 |
| Paper Fast Bordeaux B—(IG) | 250 |
| Stone Fast Orange RN Powder—(IG) | 50 |
| Tero Black FB—(IG) | 200 |
| Tero Brown FRR, F3R, F4R—(IG) | 75 |

### Unclassified Dyes

| | |
|---|---|
| Gloria Black B—(IG) | 250 |
| Grasol Blue R—(G) | 33 |
| Icyl Blue G—(BDC) | 120 |
| Icyl Brown G—(BDC) | 100 |

### Color Lakes of Coal-Tar Origin

| | |
|---|---|
| Madder Lake Powder | 200 |
| Rose Lake | 110 |
| Rose Madder Lake | 55 |
| Scarlet Lake Powder | 218 |
| Viridine Lake Powder H | 400 |

## LIST OF APPRAISEMENTS OF COAL-TAR PRODUCTS WITHIN PARAGRAPHS 27 AND 28 OF THE TARIFF ACT OF 1922

The following supplemental list contains the month of entry, the name of the product within paragraphs 27 and 28, together with the designations as "C" (for competitive) and "NC" (for non-competitive), which indicates the appraisement basis for the assessment of the ad valorem duty in paragraphs 27 and 28 of the Tariff Act of 1922.

The ad valorem rate for competitive dyes is based on the American selling price, as defined in Subdivision (f) of Section 402 of Title IV; the ad valorem rate for non-competitive dyes is based on the United States value, as defined in Subdivision (d) of Section 402 of Title IV of the Tariff Act of 1922.

This list contains the appraisements received since the publication of the March list for the Port of New York, beginning with January, 1927.

### JANUARY

| | |
|---|---|
| Anthra Yellow GC Paste 12½% | NC |
| Azo Fast Blue BD Conc. 100% | C |
| Benzo Fast Heliotrope 5RH | NC |
| Blue FF Powder | NC |
| Chlorantine Fast Green B 82% | NC |
| Chlorantine Fast Yellow 4GL 79% | C |
| Chlorantine Fast Yellow RL 85% | C |
| Chrome Blue Black B 83.5% | C |
| Ciba Brown G Paste 20% | NC |
| Ciba Scarlet G Extra Powder 98% | C |
| Cibanone Black B Paste 10% New | NC |
| Developed Brilliant Green 3G | NC |
| Developed Brilliant Orange 5G Extra | NC |
| Developed Brilliant Orange GR Extra Powder | NC |
| Developed Sky Blue 3GL | NC |
| Diazo Fast Black VB 75% | C |
| Direct Brilliant Scarlet S | NC |
| Direct Safranine RW 75% | C |
| Kiton Blue A 82% | C |
| Vat Red 2G Paste | NC |
| Vat Red Brown RP Paste | NC |
| Vat Scarlet 3B Paste | NC |
| Wool Fast Blue BR 45% | NC |
| Wool Fast Yellow 5G 100% | NC |

### FEBRUARY

| | |
|---|---|
| Benzo Dark Brown Extra | C |
| Brilliant Pure Yellow 6G Extra | NC |
| Brilliant Sky Blue 8G Extra | NC |
| Diamond Black I | NC |
| Grelanone Red 3BR Paste | NC |
| Vat Scarlet 3B Paste | NC |
| Vat Scarlet 3B Powder | NC |

### MARCH

| | |
|---|---|
| Alizarine Red IWS Powder | C |
| Alizarine Viridine FF Paste | NC |
| Anthra Yellow GC Powder | NC |
| Basic Pure Blue BO | NC |
| Bromofluorescein A Extra | C |
| Ciba Pink BG Paste 20% | C |
| Developed Brilliant Orange GR Extra | NC |
| Diazol Light Red N8B 56% | C |
| Grelanone Olive B Powder | NC |
| Hydron Brown G Paste | NC |
| Indigosol O4B | NC |
| Light Green SF Yellowish X | C |
| Phenocyanine TV | NC |
| Thio Indigo Red 3B Paste | NC |
| Vat Black B Paste for Printing | NC |
| Vat Brown B Paste | NC |
| Vat Brown R Paste | NC |
| Vat Golden Orange 3G Paste | NC |
| Vat Olive B Paste | NC |

| | |
|---|---|
| Vat Olive B Powder | NC |
| Vat Orange RRT Paste | C |
| Vat Red 2G Paste | NC |
| Vat Red Brown R Paste | NC |
| Vat Red Violet RH Paste | NC |
| Vat Violet RR Extra Double Paste | C |
| Violet Lake I Drops | NC |
| Wool Fast Orange G | NC |
| Xylene Fast Blue FF Conc | NC |
| Xylene Light Yellow 2G | C |
| Xylene Milling Blue AE Conc | NC |
| Xylene Milling Blue GL Conc | NC |
| Xylene Milling Red B Conc | NC |

**APRIL**

| | |
|---|---|
| Alizarine Light Blue LR Conc | NC |
| Alizarine Light Gray BS Conc | C |
| Anthra Scarlet 2G Paste | C |
| Brilliant Green GR 2557 Powder | NC |
| Carmin Naccarat Lake de Cochenille | NC |
| Chloramine Brilliant Red 8B Conc | NC |
| Ciba Pink BG 20% | C |
| Developed Brown 6G Powder | NC |
| Diamine Brilliant Scarlet S | NC |
| Diaminogene Blue NA | C |
| Diamond Magenta I Small Needles 100% | C |
| Direct Brilliant Scarlet S | NC |
| Hydron Brown G Paste | NC |
| Hydron Brown R Paste | NC |
| Indigo White Paste 20% | C |
| Lake Geranium DB | NC |
| Methylene Green G Extra Conc | C |
| Parasulphon Brown V | NC |
| Rhodamine 6G Conc. 75% | C |
| Rhodamine 6G H Extra | C |
| Trisulphon Brown B Conc | C |
| Vat Blue GCD Double Paste Fine | C |
| Vat Brilliant Blue R Paste | C |
| Vat Orange RRT Paste | C |
| Wool Green S | C |

**MAY**

| | |
|---|---|
| Acid Alizarine Black R | NC |
| Acid Black 2R 76% | NC |
| Acid Milling Yellow G Conc | NC |
| Alizarine Light Blue SE Conc | C |
| Anthra Scarlet 2G Paste | C |
| Anthra Yellow GC Paste | NC |
| Benzo Chrome Brown G 75% | NC |
| Chloramine Blue 3G Conc | C |
| Chloramine Blue HW | C |
| Chloramine Red B | C |
| Chloramine Red 3B | C |
| Diazo Brilliant Black B 60% | NC |
| Diazo Brilliant Orange GE Extra 50% | NC |
| Helio Bordeaux BL Paste 20% | NC |
| Helio Bordeaux BL Powder 100% | NC |
| Madder Lake 168 Powder | C |
| Madder Lake VN 1182 | C |
| Omega Chrome Brown EB | C |
| Parasulphon Brown V | NC |
| Rhodamine 6GH Extra | C |
| Tanno Flavine TR | C |
| Ultra Cyanol B Conc | NC |
| Vat Olive R Paste 12½% | NC |
| Vat Red Brown R Paste | NC |
| Viridine Lake 1026 H Powder | C |
| Xylene Light Yellow 2G | C |

**JUNE**

| | |
|---|---|
| Alizarine Red S Powder | C |
| Blue Extra Paste for Acetate Silk 20% | NC |
| Brilliant Acid Blue FF | C |
| Bromofluoresceine Extra A Powder | C |
| Carmin Naccarat a Base de Cochenille | NC |
| Chloramine Fast Orange G Conc | C |
| Diazamine Blue BR Conc | C |
| Lague Geranium DB a Base de Color d'Aniline | NC |
| Madder Lake 71 Extra Powder | C |
| Madder Lake VN 14 Powder | C |
| Methylene Blue No. 335 | NC |
| Rhodamine 6GH Extra | C |
| Sandothene Yellow NC Double Paste | C |
| Stearate de Jaune a Base d'Auramine du Triphenyl-methane | NC |
| Stearate de Rhodamine a Base de Rhodamine | NC |
| Stearate de Safranine Colorant Genre Induline | NC |
| Trisulphon Brown B Conc | C |
| Ultra Orange R | NC |
| Viridine Lake Powder | C |
| Viridine Lake 1026 H Powder | C |
| Xylene Brilliant Blue FFRX Conc | NC |
| Xylene Cyanol FF Extra Conc | NC |
| Xylene Light Yellow 2G | C |

**JULY**

| | |
|---|---|
| Benzo Chrome Brown R 75% | C |
| Chloramine Fast Orange G Conc. 100% | C |
| Diazol Brilliant Orange NJN 70% | C |
| Madder Lake VN 14 Powder | C |
| Omega Chrome Red B Conc | C |
| Pyrozol Orange R Conc. 100% | C |
| Rhodamine 6GH Extra | C |
| Sulphide New Blue BL 54% | C |
| Thionine Blue GO 100% | C |
| Trisulphon Brown B Conc | C |
| Xylene Fast Blue FF Conc | NC |

**AUGUST**

| | |
|---|---|
| Chloramine Red 3B 90% | C |
| Madder Lake Powder 25% | C |

## MORE DUTCH RAYON EXPORTED

A substantial increase is recorded in exports of rayon yarns from the Netherlands for the first seven months of 1927. During the current year 4,112,000 kilos, valued at 15,127,000 francs, were exported, as compared with 2,542,000 kilos during the first seven months of 1926.

Germany is the largest purchaser of this Dutch rayon, and the United States is second, according to Consul C. O. Spamer, of Amsterdam. Shipments to this country during the first eight months of this year totaled $1,314,-000 in value, a slight decrease from the total recorded for 1926.

---

A 10 per cent increase in the tonnage of chemical exports from France is shown by a recent check-up of exports for the first eight months of 1927, according to a cable from Trade Commissioner Daniel J. Reagan, of Paris. French chemical exports for that period are given as 1,977,000 tons, with a value slightly more than two billion francs. Although the tonnage increased, the value suffered a falling off of 10 per cent as compared with the same period in 1926.

# Technical Notes from Foreign Sources

### Dyeing Cotton Piece Goods with Mineral Khaki Colors

Mineral khaki is the name applied to the color obtained by the fixation of iron and chromium salts on the cotton fiber. The raw materials used in the process are iron acetate, chromium acetate, soda, sodium hydroxide and soap. The general details of the preparation of these reagents and the manner of their application are given in the original article.

The cotton fabric must be desized and in this process care must be taken to see that the edges of the fabric do not dry out. Otherwise spots will be formed which become quite visible after the dyeing operation. The piece goods are best rolled up in the moist condition. In subjecting the goods to the action of the acetate solutions, it is necessary to keep the temperature at the proper point for the reason that iron acetate will be decomposed at too high a temperature. The bath generally contains 20 per cent of chromium acetate, 40 per cent of iron acetate and 40 per cent of water. The operation is carried out for the most part in the cold and also with an unbleached fabric, and it is therefore necessary to allow it to remain in contact with the solution so that it is perfectly saturated with the latter. A three-roller padding machine is recommended for this purpose.

The drying of the fabric after it has been impregnated and before it is further treated is an operation of considerable importance. The principal condition is that the fabric, which is dried, be uniformly and thoroughly impregnated with the acetates. Otherwise poor results will be obtained, especially when the drying is not carried out slowly and at a low temperature.

The steaming of the fabric in a Mather-Platt at a temperature of 100 to 102 deg. Cent. for a period of eight minutes is the next operation. It has for its purpose the removal of the excess acid in the fabric and the partial development of the color due to the conversion of the acetates into hydroxides. It is possible to omit the steaming operation in mineral khaki dyeing, but then the subsequent washing and soaping are more difficult and costly. The partial conversion of the acetates into hydroxides by steam prevents the removal of acetate in the soaping treatment. It is also easier to control the uniformity of the dyeing in the steamed fabric. Furthermore, the removal of the acid by steaming means that less alkali has to be used later in its neutralization which reduces the cost of the process.

A comparison of the depth of color obtained with steaming and without steaming shows that in the former case approximately 30 per cent less chromium acetate, 10 per cent less iron acetate and 40 per cent less alkali are consumed. The reason for the lower consumption of acetates is that the salts are converted into insoluble form, the chromium compound being, however, less soluble than the iron compound.

The washing and soaping treatments are continuous operations and the color tone obtained may be varied by varying the proportions of ingredients in the soap bath. Thus the more caustic soda this contains, the redder the shade will be; and the more soap and soda it contains, the yellower it will be.

Various other factors influence the color tone. It becomes redder when more iron acetate is employed and bluer when more chromium acetate is used. The longer the steaming the deeper and bluer the color. Certain dyestuffs may also be added to the acetate solution. Thus, Alizarin Blue and Alizarin Black may be used for this purpose. The amount of color used must be carefully regulated and care must be taken to see that these dyestuffs do not form lakes with the chromium and iron salts in the presence of acetic acid. Color lakes are formed in the Mather-Platt, when the acetic acid is evaporated and the temperature is high. Other blues, such as Gallamin Blue, may also be used, but they do not give as fast shades as the Alizarin dyestuffs. Copper sulphate has also been used to obtain bluish shades, and manganese salts have also been added to obtain deeper fast shades. These are, however, hard to control. (Deutsche Faerber Zeitung, 1927, p. 822.)

---

### Dyed Fabrics for Rubberproofing

Considerable skill is required in the manufacture of rubberized fabrics. There are three different ways in which the proofing of the fabric can be carried out, depending on the method of vulcanization; that is, cold process, dry heat process and steam heat process. The nature of this process determines the required properties in the fabric that is being treated. Thus, there are three problems involved in this manufacture. The fabric to be proofed must be prepared in such a manner that its strength is not impaired nor its character modified, so as to reduce its resistance to deterioration during proofing. In the second case, those fabrics which are dyed must necessarily be colored with such dyestuffs that will resist the vulcanization treatment. Finally the dyestuffs, mordants and other chemicals that may be used in the dyeing process and which become fixed on the textile fibers must not have any deleterious action on the rubber film that is applied to the textile.

Thus, woolen and silken materials must be very carefully treated if alkalies are employed, and in the case of cottons and other cellulosic materials the formation of oxycellulose must be avoided. As far as the dyestuffs are concerned, there is no trouble in selecting those that are resistant to vulcanization, for many dyestuffs possess the power of withstanding this treatment. Thus practi-

cally all of the direct dyestuffs are suitable, except those whose shades are affected by acids. And even some of these may be used, if the proofed fabric is treated with an alkali after vulcanization in order to bring back the color to the proper shade. It should be mentioned that while one dyestuff may be sufficiently fast to one method of proofing, it will not always follow that it will be satisfactory when the fabric is proofed by another method.

As far as the effect of the dyed fabric on the rubber film is concerned, it should be pointed out that the presence of certain metals in the fabric will give rise to catalytic reactions. Furthermore, consideration must be taken of the natural impurities that are usually found in the textile fiber. Thus the presence of natural fats and waxes, particularly in the case of the woolen fiber, are not favorable to the proofing treatment. It is advisable to remove these impurities first by thorough scouring before proofing the fabric.

It is essential that all textile fabrics be free from acids prior to proofing, for the treatment will cause the acid to attack the fiber and tender it. It has been found advisable at times to proof the fabric in the gray. The proofed fabric must, moreover, be tested to determine its resistance to light. (Textile Manufacturer, 1927, Vol. 53, pp. 171 ff.)

### Coating Fabrics with Powdered Materials

In an apparatus for transferring mica to a web by means of a revolving suction drum, the latter is arranged above a pressure air trunk containing the mica in suspension, and rotates about a hollow shaft to which a stationary suction chamber is connected and which is in communication at both ends with a suction blower. The drum a, Fig. 1, has its circumferential surface perforated, and rotates about a fixed hollow shaft b. Within the drum is a suction chamber d of sector shape, formed by two radial walls c and $c^1$ secured to the shaft b, and in communication with the latter through a slot $b^1$. The chamber is located above a vertical trunk e which is supplied with mica held in suspension by air from a blower t. The shaft b is connected at each end with suction blowers f and $f^1$, Fig. 2, so that the suction acts equally over the whole width of the drum. Wings g, which may be adjustable, may be provided in the chambers d to equalize the suction. The mica caused to adhere to the wall of the drum by suction action as it passes between the trunk e and the chamber d is transferred to the web h, Fig. 1, as the latter passes over a heated roller m which presses it against the drum at a point outside the range of the suction chamber d. (British Patent No. 265,444.)

FIG. 1.

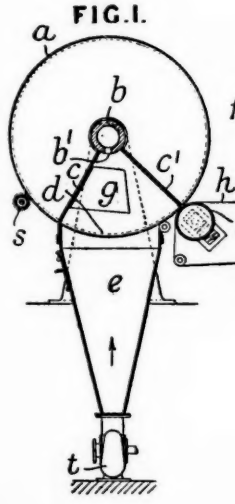
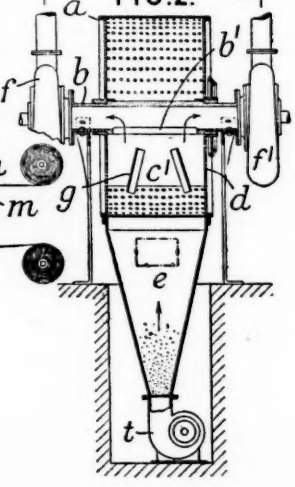



FIG. 2.




### Reserve Under Aniline Black

Experiments were made to determine the possibility of securing reserves and color effects on Aniline Black which are of a superior resistance to washing and soaping. The direct colors under para-phenylenediamine were replaced by Indigoid, Thioindigoes and Indanthrene colors.

In this case it is necessary to add an excess of alkali to the reserve in addition to that which is required to prevent the formation of a brown shade on the fabric. The reserve composition must also contain a reducing agent for fixing the dyestuff on the fiber. A certain amount of glycerin is also advantageously added to the composition. Thus a reserve composition, known as White H, contains 80 parts of British gum, 120 parts of water, 500 parts of caustic soda solution and 33 deg. Be. concentration, 200 parts of Rongalite C and 100 parts of glycerin, making a 1,000 parts in all.

For overprinting purposes the dyestuff in paste form is added to a bistre of para-phenylenediamine and vanadium chlorate. Thus, for example, the composition known as Blue H, contains 100 parts of Helindon Blue Paste, 20 per cent, and 900 parts of bistre printing paste containing para-phenylenediamine and vanadium chlorate.

Good effects are obtained with the following dyestuffs: Helindon Blue 2B for blue shades, Flavanthrene G for yellow shades, Ciba Scarlet for pink shades, Helindon Red 2B for heliotrope shades. These and other colors may be mixed together to obtain a great variety of shades.

The fabric is first printed with the White H Reserve and then with the brown base which contains the dyestuff. It is well to dry the fabric between the two printing operations, for the reason that the strongly alkaline reserve has a tendency to run. It is also possible to overprint a design in various colors, in which case variously colored bistres, which contain the different dyestuffs, are used. The material is then steamed in a Mather-Platt apparatus, just as in the case of Aniline Black dyeing, and then it is washed and soaped.

Similar effects are obtained under diazo colors. Thus a fabric, which has been slop-padded with naphthol, is printed with a reserve, as above, containing caustic soda and formaldehyde hydrosulphite. The proportions of these ingredients are, however, different in this case, for the reason that the proportion of alkali in the mixture

can be considerably reduced. For example, the reserve composition, known as Blue HB, contains 400 parts of a gum solution, 200 parts of caustic soda of 38 deg. Be. concentration, 100 parts of glycerin and 300 parts of Rongalite C, making 1,000 parts in all.

The overprinting is carried out with the aid of diazo printing paste, which contains one of the aforementioned dyestuffs in paste form, such as Blue HB, which is very well suited for this purpose. Thus the printing paste may contain 100 parts of Helindon Blue 2B Paste, 20 per cent, and 900 parts of the printing paste, diazotized alpha-naphthylamine. After printing the fabric is passed through a Mather-Platt, remaining therein four minutes, and is then washed and soaped in accordance with the directions for diazo colors. (Textile Mercury, through Der Textilchemiker und Colorist, 1927, p. 114.

## NINE JOIN SILK ASSOCIATION

Nine silk firms were elected to membership in the Silk Association of America, Inc., at a recent meeting of the Executive Committee. The new members are as follows:

Stave Bros., Inc., New York City, broad silk manufacturers; Edna Silks, Inc., Allentown, Pa., broad silk manufacturers; Stone Silk Company, Childs, Pa., broad silk manufacturers; Culpeper Silk Mills, Culpeper, Va., broad silk manufacturers; Allendale Silk Mills, Allentown, Pa., broad silk manufacturers; Altoona Textile Company, Altoona, Pa., broad silk manufacturers; Goshi Okaya Raw Silk Corporation of America, New York City, raw silk importers; B. Schwartz Silk Company, Inc., 200 Madison Avenue, broad silk manufacturers; Kaufman Brothers, Paterson, N. J., broad silk manufacturers.

North Carolina State College men have been active in the Southern Textile Association since its organization in 1908. President L. R. Gilbert, a graduate of the Textile School in class of 1907, presided at the recent Birmingham meeting. Carl R. Harris, graduate of the Textile School in 1916, is vice-president and chairman of the spinners' section.

Mr. Gilbert is the second graduate of the North Carolina State College Textile School to hold the office of president in the association. John W. Clark, president of Randolph Mills, Franklinville, N. C., has also served.

German dyes are securely entrenched in the Shanghai market, according to advice from Trade Commissioner A. B. Calder, of Shanghai, to the chemical division of the Department of Commerce. Fully half of the aniline dyes imported through this important Chinese port during the first eight months of this year were German dyes.

Importations of Indigo, 20 per cent basis, through Shanghai for this eight-month period totaled 171,000 piculs (133 pounds), representing a decrease of 40 per cent from the same period last year; but direct importations at Tientsin partially offset this decline, as imports of Indigo there, January to September, 1927, totaled 45,000 piculs, compared with 26,000 in the same period last year. Aniline dye importations at Shanghai for eight months ending August 31, 1927, are valued at 1,521,000 haikwan taels, or 21 per cent increase over last year for the same period, with 53 per cent of total supplied by Germany and 15 per cent by the United States.

A very conveniently arranged list of Manufacturers of Dyes and Other Synthetic Organic Chemicals for the year 1927 has just been issued by the Synthetic Organic Chemical Manufacturers' Association. Products are listed according to the data given in the latest Census of Dyes published by the U. S. Tariff Commission. The manufacturers are classified alphabetically, with all of their products listed beneath their names.

**The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i. e., help wanted, machinery or supplies for sale—the rate is $5.00 per column inch or less per insertion.**

### DYESTUFF CHEMIST

Dyestuff chemist, 34, married; over ten years' experience, six years in charge manufacturing meta and para toluylenediamine, Naphthol Green, azo colors and intermediates; also some vat color experience; desires permanent connection with chance of advancement commensurate with ability. Salary $50. Address Classified Box 410, American Dyestuff Reporter.

### SALES EXECUTIVE WANTED

Manufacturer of aniline dyes desires for the New Jersey and Pennsylvania territory one familiar with this territory to conduct and direct sales policy, etc. Communications treated strictly confidentially. Address Box 425, American Dyestuff Reporter.

### DYER'S ASSISTANT

Textile chemist with years of laboratory experience, especially in the dyeing of silk hosiery, desires position in dyehouse. Textile school graduate. Address Classified Box 428, American Dyestuff Reporter.

### SALESMEN WANTED

Progressive manufacturers of a complete line of textile chemicals for all trades (sulphonated oils, softeners, sizings, specialty soaps, finishes, etc) have openings for progressive salesmen in following territories: Pennsylvania, New York State, New England, Southern States. Only men with established selling connections need apply. Salary, expenses, commission. Unusual opportunity for the right parties. Apply Box 429, American Dyestuff Reporter.